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VETERINARY MEDICINE

DECEMBER 1945

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KANSAS CITY, MISSOURI

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Four hundred pounds of blood circulate through the udder of the dairy cow for each pound of milk produced.

Five thousand units of penicillin, administered by the mouth, every two hours until 10 doses were given, cured 38 of 53 cases of gonorrhea according to staff members of the Sanford University School of Medicine. To protect the penicillin from destruction by gastric secretions the doctors developed an alkaline coating that gave highly satisfactory results.

The American Medical Association estimates that this country will need, during the next few years, 30,000 more physicians (Veterans Administration 15,000, Navy 5000 and Army 10,000) than it had before the war. At the present rate of enrollment, medical schools will supply only 16,000 of this needed increase. No one seems to have investigated the probable requirement for veterinarians after the war or the probable supply.

The demand for streptomycin far exceeds the supply. Only four manufacturers are producing it in commercial quantities—Merck, Upjohn, Abbott and Squibb—and the production in September was but 70 ounces. The amount required for military needs alone is approximately 2000 ounces a month. Various companies other than the four mentioned are planning manufacture of streptomycin but the date when the production will be adequate to meet military and civilian demand is not foreseeable. The standard daily dose of streptomycin is one gram—one million units.

From 1910 to 1940, the number of persons in this country over 45 years of age increased twice as fast as did the whole population.

The receipts from the sale of Christmas seals largely finance the work of the National Tuberculosis Association and its 2,500 affiliates in the 48 states. Its object is prevention of tuberculosis. Some half-million Americans have the disease. Only 300,000 are known cases. The remainder must be discovered to prevent the spread of infection from them, and for their own sake. This requires accurate diagnosis, the cost of which is high when great numbers of persons are involved. The purchase of Christmas seals makes this work possible. Tuberculosis sanatoria now cost the taxpayer 75 million dollars annually. No investment pays better in dollars than preventing this most expensive of diseases, to say nothing of its humanitarian values. This year marks the 50th anniversary of the discovery of the X-ray which is indispensable in the diagnosis of tuberculosis. It is a fitting occasion on which to redouble its use.

Captain Udall Commended

With others who voluntarily submitted to tests, beyond the call of duty, subjecting themselves to pain, discomfort and possible permanent injury for the advancement of research in the protection of our armed forces, Capt. Robert H. Udall was commended, 26 Aug. 1945, by the Chief of the Chemical Warfare Service.

Meritorious Service Unit Plaque Award

During the period 1, December 1943 to 8, Sept. 1945, SCU 1100, First Service Command Veterinary Service at Large, Headquarters First Service Command, Boston 15, Massachusetts, has accomplished in an outstanding manner, the assigned tasks of source, storage and shipment inspections of subsistence, supplied troops both in the United States and abroad and has responded commendably to military exigencies requiring long hours of duty.

Inspections during this period were extremely complicated due to scarcity of acceptable products obtainable, loss of key manpower personnel and unstable specifications, necessitating to a high degree, force diplomacy and the rendering of technical decisions promptly and accurately. In addition, the veterinary inspection service, as rendered in requiring vendors to comply strictly with contractual obligations, has been of the utmost value in protecting the financial interests of the government.

The accomplishments of this organization, together with the high standards of discipline, superior military courtesy and outstanding devotion to duty of its personnel, are exemplified by its record, during this time.

FitzGerald Awadred Legion of Merit

Colonel Gerald W. FitzGerald, V.C., was awarded the Legion of Merit at a ceremony at the Quartermaster Depot in San Antonio, Aug. 16, 1945. The citation reads:

For services as Chief of the Veterinary Service, San Antonio Army Service Forces Depot, from December 7, 1941, to August 12, 1943. By reason of his planning, knowledge and initiative he effected an uninterrupted flow of food products of the highest quality and substance and of tremendous volume from procurement sources to forces in the field, both in the United States and overseas areas. He also organized and conducted courses of instruction for both officers and enlisted men that fitted them for the vitally important duty of insuring that the fighting forces of the United States Army and Navy were supplied with foods of such quality and substance as to build their sinew, endurance and morale.

Colonel FitzGerald was graduated from the Kansas State College in 1916 and enlisted immediately in the New Mexico National Guard. In July, 1916, he was appointed Veterinarian in the Quartermaster Corps of the Army in which he served a year and was commissioned in the Veterinary Section of the O.R.C. and ordered to active duty during World War I in the Veterinary Section of the O.R.C. and participated in five major engagements. Later he served eight months with the Army of Occupation in Germany. He was commissioned in the Veterinary Corps of the Regular Army in 1920.

Horseback Riding in the Army

Recently horseback riding was added to the sport facilities available to the American officers and enlisted men and women at Allied Force Headquarters in the Mediterranean Theater of Operations. They utilize captured, German artillery and cavalry horses of which 70 are available.

Spirited horses for the proficient, and well-trained saddle horses to build confidence for the novice, have attracted an average of 65 riders a day, seven days a week.

German prisoners of war who served in cavalry and artillery, or who were farmers before the war, groom the horses twice a day and rub them down each time they are returned to the stables. Special attention is given the horses by a prisoner who was a veterinary officer in the German army.

Reconversion

We are still considerably shaken, too. There is a psychic tax on a generation of Americans that has made so much history in so short a time. The score has been added up so rapidly and to such proportions that our mental calculators are short by a long way of registering the cumulative total.

In a few brief months the nation has borne the death of a great President and witnessed the transfer of his responsibilities to the shoulders of another without a single skip in the heart-beat of the democratic machinery. The "Nordic supremacy" theory and the Greater Asia Co-Prosperity Sphere have been laid low. The San Francisco Charter is a reality. And a blinding flash on a New Mexico desert has ushered the world, uneasily and unwillingly, into the Atomic Age.

All of this needs thinking through, but time for thinking is not given us. We turn to face the realities of a postwar world, with more doubt than plan as to what to do about them. Where does the average citizen begin to bind up the nation's wounds—the nations' wounds,

rather? Is it to be a two hundred billion dollar economy for North America? Or shall we see shortages of goods and food so recently familiar giving over to shortages of money so long familiar? The present is uncertain and the future shrouded. Not knowing what else to do, the average citizen, perplexed and somewhat apprehensive, goes on at his own woodpile.—*Am. Pub. Hlth Assn. News Letter.*

Signal Corps, U. S. Army

Major John G. Cranfield, Veterinary Corps, 718 El Camino Real, San Carlos, California, vaccinating a Signal Corps pigeon for pigeon pox. Tec. 5 Andrew J. Hollman, right, holds the bird. All Army pigeons in POA are vaccinated for pox

No veterinary officers will be sent overseas, who have a point score of 30 or more or who are 35 years of age or older, to replace officers eligible for separation from the military service.

★ ★ ★ ★

Commission in the Regular Army

The Surgeon General of the Army has invited emergency officers of the Medical Department, both those who have been discharged and officers still on active duty, who desire to be considered for a commission in the Regular Army, to submit a statement indicating their interest in a commission in the regular service, to the Adjutant General. Officers on active duty should send their statements through their commanding officers; others should write the Adjutant General direct.

The manner of selecting and integrating officers into the Regular Army and the number to be accepted will be determined by the Congress and until it acts no definite plans for the induction of officers can be formulated. A statement of interest will in no way obligate the officer to accept a commission should it later be offered to him. No officer will be commissioned in a grade higher than that held in wartime.

The Office of the Surgeon General of the Army microfilms 44 medical journals and distributes them within 15 days of publication to medical officers all over the world. This saves 95% of the shipping space. One 100-foot roll of microfilm holds about 1300 pages of magazine, yet weighs only six ounces.

★ ★ ★ ★

War Dogs Numbered 10,206

A total of 18,372 dogs, donated by their owners, were accepted by the Army Quartermaster under the procurement plan adopted in July, 1942. Of this number 10,206 were trained and issued for active duty. Seven hundred and ten are still on duty with the Coast Guard and 1939 are with the Army.

Of the total of 18,372, 7,525 have been returned to their owners; 389 were sold and 7,809 died in the service or were reported missing. As the dogs now on duty become surplus they will be returned to the donors if wanted, otherwise they will be offered for sale. Since the Army has more than 17,000 applications for the purchase of these surplus dogs, no more applications are being accepted.

★ ★ ★ ★

Army Inaugurates Dog Breeding Program

The War Department has announced plans for a long-range, Army dog breeding and training program to replace wartime procurement and training measures. In carrying out the new program, the Remount Service of the Quartermaster Corps will place brood bitches with competent civilian dog breeders, under a plan similar to that long followed by the Army in breeding and training horses.

Under this plan the Army will control civilian breeding and select for training those puppies best suited for Army service. Dogs will be used for sentry duty in the armies of occupation and in experimental work on new uses of dogs in war by the Army. Puppies, surplus to Army needs, will be retained by the civilian breeders or offered for sale under procedures similar to those followed in the horse-breeding program.

Dogs, to form the nucleus of the new Army War Dog Breeding program, will be selected from outstanding dogs now available in England, Holland, Belgium and Germany, supplementing the finest dogs available in this country. The program contemplates possible use of the German shepherd, boxer, Airedale terrier, doberman pinscher, rottweiler and giant schnauzer.

★ ★ ★ BUY VICTORY BONDS ★ ★ ★
AND HOLD THEM

Veterinary Officers Separated from the Military Service Since V-E Day*

Bolenbaker, Roger F.	California
Elander, Burman J.	California
Emminger, Albert C.	California
Gomez, Frank D.	California
Griffith, Robert L., Jr.	California
Catlett, James G.	Florida
Dennis, Walter R.	Georgia
Griffith, Aaron R.	Georgia
Harman, Charles C., Jr.	Georgia
Osteen, Wilson M.	Georgia
Skinner, Warren L.	Georgia
Bly, Howard J.	Illinois
Galloway, Walter G.	Indiana
Nichols, R. E.	Indiana
Cassidy, Donald L.	Iowa
Dermody, John M.	Iowa
Fry, Lloyd V.	Iowa
Koch, Emil L.	Iowa
Mossman, Donald F.	Iowa
Ramsey, James D.	Iowa
Rieke, Glenn W.	Iowa
Ritter, Earl C.	Iowa
Rosenfeld, Benjamin	Iowa
Snyder, George A.	Iowa
Meeks, Robert B.	Kansas
Phipps, Edward C.	Kentucky
Youmans, Ray S.	Kentucky
Hornsby, Will S., Jr.	Louisiana
Thomas, George O., Jr.	Louisiana
Maugel, John P.	Maryland
Taylor, James K.	Maryland
Arlein, Myron S.	Massachusetts
Cohen, George	Massachusetts
Johansen, Einer Wm.	Massachusetts
Huston, Ben S.	Mississippi
Cullinson, James M.	Missouri
Damer, Eugene F.	Missouri
Hasson, John R.	Missouri
Lindenstruth, Robert Wm.	Missouri
Pickett, Charles D.	Missouri
Winchester, B. N.	Missouri
Cassidy, Donald L.	Nebraska
Chase, Carl Eddrie	New Hampshire
Kinchelow, Wm. D.	New Jersey
Ebertz, Charles D.	New York
Fortune, Richard LeRoy	New York
Kane, Joseph R.	New York
MacKellar, Robert S., Jr.	New York
Nossov, Morris A.	New York
Shaner, Ralph F.	New York
Stafford, Wallace B., Jr.	North Carolina
Bolin, Fonsoe M.	North Dakota
Crawford, Edwin M.	North Dakota
Boyer, Paul E.	Ohio
Butz, Harrison Wm., Jr.	Ohio
Hood, James M.	Ohio
Keefer, Wesley O.	Ohio
Bennett, Clarence K.	Oklahoma
Denton, John P.	Oklahoma
Harkavy, Hyman J.	Oklahoma
Mitchell, Albert P.	Oklahoma
McQueen, George L.	Oregon
Soderholm, Lawrence G.	Oregon
Gillespie, James H.	Pennsylvania
Haines, Wm. A., Jr.	Pennsylvania
Landis, Paul F.	Pennsylvania
Seagers, Wm. J.	Pennsylvania
Bouton, Jay H.	Texas
Erisman, Robert E.	Texas
Fink, Carl	Texas
Fisherman, Frank	Texas
Gearhart, Benj. F., Jr.	Texas
Hartman, R. H.	Texas
Hathaway, James H.	Texas
Kothman, Victor L.	Texas
Lauraine, Loye J.	Texas
Maier, Elmer A.	Texas
Shipley, Michael	Texas
Taylor, John W.	Texas
Watts, Floyd B.	Texas
Pinckard, Wendell L.	Tennessee
Geisler, Richard E.	Utah
Brumble, George H., Jr.	Virginia
Canfield, Rolden F.	Washington
Guard, William P.	Washington
von Glan, Edward H.	Washington
Long, Geo. K.	Wisconsin

*This list is not complete but contains all names reported to Nov. 1, 1945.

ANCL signalizes the Office of Army-Navy Liquidation Commission. It has for sale 4,000,000 separate items of overseas supplies of the Army and Navy.

During 1944, the Army Veterinary Corps inspected more than eight billion pounds of meat, food and dairy products. Of this amount, one billion pounds was for the Navy. Rejections before purchase exceeded 300,000,000 pounds.

Typhoid fever in the armed services has been reduced to less than 0.1% by the use of typhoid vaccine. All typhoid vaccine used in the armed forces is produced at the Army Medical Center, Washington, D. C., which ships out more than a million doses a year in specially designed wire-bound boxes.

Veterinary Students and the ASTP

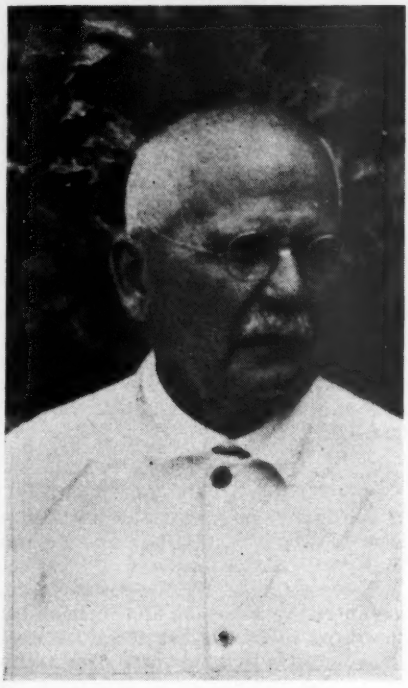
Approximately 1660 veterinary students participated in the professional ASTP. Approximately 30 pre-professional students of veterinary medicine participated, many of them participated in the program for a very short period.

Approximately 140 graduates of the ASTP were commissioned in the Veterinary Corps, AUS, at time of graduation. Other graduates who participated in the program were later commissioned from civil life or from an enlisted status after induction. The latter number is not known.

A student who was a member of the ASTP at time of graduation and was not appointed in the Veterinary Corps then was given an opportunity to enter the military service as an enlisted man and if he did not so elect was separated from the Enlisted Reserve Corps and became a civilian. Those who were not commissioned and ordered to active duty at time of graduation were not appointed in the Veterinary Corps Reserve.

Professor Williams Dies

Professor W. L. Williams died at his home in Ithaca, N. Y., Oct. 23, 1945, after an illness that began early in July. Had he lived until February 26th next, he would have been 90 years of age. He was graduated from the Montreal Veterinary College in 1879, and since he was actively engaged in veterinary research until the onset of his last illness, his professional career extended over 66 years—12 years in general practice at Bloomington, Ill., two years Professor of Veterinary Science at Purdue University, three years in a similar capacity at the Montana Agriculture College and 49 years at the New York State Veterinary College at Cornell University as professor and professor emeritus.



Walter Long Williams, 1856-1945

This extrordinarily long professional career was fruitful throughout. While in practice at Bloomington, Il., Professor Williams was the first, in this country, to recognize dourine and to him is due the major credit for eradicating it from the state. He was active in the organization of the Illinois Veterinary Medical Association and served as one of its early presidents (1889-90). In later years he developed or improved the technic of various surgical operations—the most notable of which was the ventricle stripping operation for "roaring" in horses. But his greatest contribution to veterinary medicine was in the field of the diseases of reproduction in animals. In this field, which occupied his major effort during his half century of labors at the New York State Veterinary College, his contributions to veterinary science have been unequalled in this or any other country.

Throughout his career there flowed from the pen of Professor Williams a steady stream of articles which enriched veterinary literature to a remarkable degree. Forty-five years ago he published "Williams Surgical and Obstetrical Operations" which achieved instant popularity as a text in veterinary colleges and is still so used. In 1909 he published "Veterinary Obstetrics" which in four editions has dominated the field of veterinary obstetric literature in this country for nearly four decades. A Spanish translation is used as a text in veterinary colleges throughout the Spanish language countries of the world. The Italian translation performs the same service for Italian veterinary colleges. An examination of sales in our book department reveals that "Veterinary Obstetrics," now 36 years' old, stands third in the number of sales during the past few months, being exceeded by but two other works, one on artificial insemination and the other on diagnosis—both new works. In 1921 "Diseases of the Genital Organs of Domestic Animals" appeared, which in three editions has achieved a popularity as great as that of "Obstetrics." It, too, has been translated into the Spanish language.

However, it was to periodical veterinary literature that Professor Williams made the major portion of his contributions to veterinary literature. An incomplete list of his publications which appeared in the July 1945 issue of *The Cornell Veterinarian* includes 256 titles; the first appearing in 1883. A manuscript received a few weeks ago by this magazine awaits publication. Sixty-three years from his first to his last contribution to veterinary literature and perhaps 400 in between!

Professor Williams was the 18th president of the A.V.M.A. (U.S.V.M.A.), being elected at the Boston meeting in 1892. None of the 17 who preceded him in that office are living and of the 49 who have occupied that position since the term of Professor Williams, only 18 are now living. He is survived by three daughters, two sons, a sister, two brothers and six grandchildren. Burial was at Ithaca.

Buy Victory Bonds—to have and to hold

Penicillin in Mastitis

The most effective manner in which to employ penicillin in the treatment of mastitis may not yet have been discovered, but the consensus at present seems to be to inject 12,000 to 20,000 units per quarter after complete milking. Both the severity of the case and the size of the udder have a bearing upon the dosage. In very large udders in which the attack is acute and severe, some deem as much as 50,000 units per affected quarter desirable. Where the injection is to be repeated opinions differ, some give the injections at two or three-day intervals, but the majority favor injection at consecutive milkings, i.e., twice daily until five injections have been made. Aqueous solutions are preferred to oily injections by the majority of users.

Statistics! Statistics!

In his presidential address before the U. S. Livestock Sanitary Association in 1927, Dr. L. Van Es said:

In dealing with disease problems of social, economic or natural importance it is essential to have available at any time the latest statistical evidence pertaining to the morbidity, mortality, prevalence and geographic distribution. . . . A central statistical organization prepared to collect and to distribute promptly, information pertaining to the incidence and occurrence of communicable diseases would be a helpful addition to our disease-fighting equipment. Without the intelligence thus made available we navigate an uncharted sea.

The undeclared, but ever existing, taboo against the collection of statistics on the health of livestock is a short-sighted policy based upon the fear that the big figures may be detrimental to business. The fear is general and provincial; not without business reasons, the food industry disapproves any mention of disease in connection with animal-food products and, among the livestock growers, there is an ingrained dread of signalizing disease-ridden areas brought about by willful neglect of livestock sanitation. It's all a matter of sales: *market food* and *real estate*.

As seen by livestock sanitarians a more far-sighted policy would be to publish authentic and complete statistics that help to reduce the livestock morbidity to a point too trivial for the food-buying public to notice and to a degree that it become no deterent to the realtor. Hiding intelligence about the means of human subsistence in this food-conscious world can be of but temporary advantage. Popular confidence in the purity and wholesomeness of food—the veterinarians objective seems to be the more logical.

Although Nuttall's cottontail rabbit is present in only 56% of the counties in 12 western states where Rocky Mountain spotted fever is endemic, 99.58% of the cases of the disease originate in those counties in which the rabbit occurs.—*U. S. Pub. Hlth. Rept.*

Grass Tetany in Texas

Of the more than 600,000 cattle that were grazed on wheat last fall in the Panhandle 8,076, valued at $600,000, died of grass tetany or, as the cattlemen call it, wheat poisoning. A committee of cattlemen and veterinarians is endeavoring to induce the federal Bureau of Animal Industry to inaugurate a research program in the Panhandle to determine means of preventing this loss which occurs annually to about the same extent.—*Tex. Vet. Bul.*

Slight Increase in T. B. Reactors

Official tuberculin testing of cattle during the year ended June 30, 1945, disclosed 0.24% of reactors, according to the Bureau of Animal Industry of the U. S. Department of Agriculture. Though low, this figure represents a slight increase over 0.2% in 1944 and 0.18% in 1943. Bureau officials regard the increase as significant evidence of the need for follow-up work in the eradication program.

In an experiment in Australia a single 40gm dose of phenothiazine removed all *Oesophagostomum columbianum* from 14 sheep. A dose of 20gm removed all these worms from only 11 of 14 sheep. A second dose of 20gm removed all the worms in the remaining three sheep. Since in nodular worm control and eradication projects it is important that all the worms be removed from all the sheep, the larger amount preferably given as two doses is recommended.

New Livestock Director for Cuba

The many friends in this country of Dr. Banardo J. Crespo, will learn with pleasure of his appointment to the office of Livestock Director by the president of the Republic of Cuba.

Doctor Crespo was graduated from the Veterinary Department of the University of

Bernardo J. Crespo

Havana in 1910. He has visited the United States on several occasions and served several terms as Foreign Corresponding Secretary of the A.V.M.A. for Cuba. In 1930 he joined a party of American veterinarians on a tour of Europe in connection with the XI International Veterinary Congress, to which he was the official delegate from Cuba.

Doctor Crespo formerly held the office of Chief of the Section of Animal Industry in the Cuban Ministry of Agriculture but of recent years has been engaged in commercial lines.

Detoxication of Gramicidin

The toxicity (hemolytic action) of tyrothricin and of its compounds gramicidin and tyrocidine has been a major limiting factor in the applicability of these agents to therapeutic purposes. Recently Fraenkel-Conrat and associates have reported that the toxic activity of gramacidin can be lowered 80 to 90% by treating it with formaldehyde, without affecting its antibacterial properties. In the case of tyrothricin the formaldehyde treatment lowers both its toxicity and its antibiotic activity.

Officials of the U. S. Department of Agriculture have determined that as little as one one-millionth of a cubic centimeter of hog-cholera virus can cause a fatal attack of the disease, i.e., a single drop of the virus contains 62,500 lethal doses.

Penicillin administered intravenously or intramuscularly does not reach infection in the body cavities—spinal canal, uterus, udder, etc. To reach infection in such locations it should be injected directly into the cavities. Fortunately penicillin is effective in such cavities for 12 hours—three times as long as in the blood stream—and medication twice daily is adequate to obtain a continuous effect from the drug.

Treatment of Surra

Veterinary officers with the British Army in India have reported reasonably satisfactory results from use of "antrypol" (substantially Bayer 205) in the treatment of surra. In the experience of American veterinary officers antrypol proved markedly toxic for a considerable percentage of horses and caused extensive liver damage. Preliminary tests of a newly developed preparation, p-arsenophenylbutyric acid, by the American veterinary service in the India-Burma-China theaters, are very promising.

Chloral Hydrate Supplants Chloroform for Anesthesia

French army veterinarians use chloral hydrate exclusively for general anesthesia in the horse. They claim a greater degree of safety and, with the addition of sodium citrate, a pronounced reduction in hemorrhage.

The dosage is calculated on the body weight, 11gm of chloral and 5.5gm sodium citrate per 100 kilos (0.8 and 0.4 grain per pound). With this dosage two to three hours of surgical anesthesia is attained. The drugs are dissolved in sterile distilled water and injected into the jugular vein (against the flow of blood) with a simple gravity apparatus, preferably with the animal cast for the operation. The intravenous injection is made very slowly.

When the operation is completed, or for any reason termination of the anesthesia is desired, it is brought about by the injection of 0.3gm of cocaine hydrochloride in 5cc of distilled water into the opposite jugular. This revives the animal in five to ten minutes.

Points of interest are: the French calculate the exact dose of chloral and citrate according to the weight of the animal and the anesthesia is terminated at will by cocaine.—*J.R. A.V.C.*

Veterinarians Needed for Poultry Inspection

The Dressed Poultry Inspection Section of the United States Department of Agriculture is in need of the services of qualified, graduate veterinarians to fill vacancies on our force.

Due to increased interest in the evisceration of poultry under Federal inspection, openings are available in various sections of the country.

Entrance salary is $2980 per year based upon a 40-hour, 5-day, work week. Ordered overtime that may be performed in excess of this is compensated for.

No written examination is required. Appointments are made on the basis of applications submitted. Opportunities for advancement are excellent.

Veterinarians interested are requested to phone, write or wire any of the Offices listed below, giving full information as to their availability, location preferences, etc.

Dr. H. A. Weckler
Room 910, U. S. Custom House
610 So. Canal Street
Chicago, Illinois—Phone Harrison 6910
Dr. Roy E. Willie
Room 406, Post Office Building
Omaha 2, Nebraska—Phone Atlantic 8212
Dr. J. R. Harney
Room 604, U. S. Custom House
2nd & Chestnut Streets
Philadelphia, Pa.
Dr. R. B. Mericle
737 U. S. Appraisers Bldg.
630 Sansome Street
San Francisco, Calif.

Pasteurization Test for Cheese

Through a modification of the phosphatase test, developed by Sanders and Sager, Bureau of Dairy Industry, U. S. Department of Agriculture, for the examination of cheese, as little as 0.1% of raw milk used in the manufacture of chedder cheese can be detected, or a decrease of only two degrees from the proper pasteurizing temperature is revealed by the modified phosphatase test, which is easily made regardless of the age of the cheese.

The test is important to food inspectors in states (New York, California, Indiana, Illinois) where the health laws require that all milk used in the manufacture of cheese must be properly pasteurized or the cheese held for a period of 60 days before sold for consumption.

Since cheese made from unpasteurized milk is a cause of occasional outbreaks of typhoid fever and undulant fever, it is to be expected that other states will eventually require pasteurization. Further, since 60-day curing or even a longer period does not obviate, but only lessens, the danger of infection from consuming contaminated cheese, universal pasteurization, in time, may be required in states having a good health service.

The Mississippi experiment station reports cases of inflammation of the abomasum and some death losses were noted in two herds of cattle having access to opened bags of superphosphate or basic slag.

Pullorum Disease

A single infected bird in the flock may be the source of a serious outbreak. Therefore the various percentages of reactor tolerance, which are permitted under the National Poultry Improvement Plan are merely indications of lame steps in the right direction. A "Pullorum Tested" flock showing more than 2% reactors, is a poor risk as a source of stock, and the other grades, with the exception of the "Pullorum Clean" grades, are very little better.—*H. J. Stafseth* and *C. W. Darby.*

Veterinarians Conserve Our Beef Supply

In three livestock market centers of the East, which 20 years ago received large numbers of cattle seriously affected with tuberculosis, cases of this disease are now rare. Of 430,230 cattle slaughtered in those centers during the year ended June 30, 1945, only 59 head —or about 1 in 7,300—were condemned for food because of tuberculosis by inspectors of the federal meat inspection service. In 1925 at the same market centers and under the same inspection, condemnations ran into the thousands and the proportion was about 1 in every 80 animals slaughtered. The livestock centers cited are Boston, Mass., Buffalo, N. Y., and New York City.

Officials of the Bureau of Animal Industry, U. S. Department of Agriculture, attribute most of this saving in cattle and beef to the systematic campaign against bovine tuberculosis. For livestock owners, city residents and others who coöperated, the campaign of eradication is "paying off" in greater conservation of beef as well as in an increase in milk production per cow and in greater wholesomeness of products from healthy animals.

Had the proportion of tuberculous cattle at the three markets been as great last year as 20 years ago, there would have been a loss, to the food supply, of more than 5,000 animals representing about 2,000,000 pounds of carcass beef. Similar savings, in varying degrees, are known to have occurred and are still in progress at the many other livestock markets of the country.

Because of real or suspected exposure to rabies, more than 5000 persons in Illinois were given pasteur treatment during 1944.

Appropriations for Public Health

Nearly 200 million dollars have already been appropriated by the Federal Government for public health activities during 1946 and various additional public activities are under consideration by the Congress.

There is much evidence to indicate that a veterinarian, as whole time or part time employe in a county health unit, is a valuable member of the team. Yet, of the approximately 2000 county and other local public health units that have been established since World War I, very few have included veterinarians as members.

After an eight-year trial in a number of Pennsylvania schools the destruction of airborne bacteria by utraviolet light in schoolrooms is declared to be more effective in preventing epidemics, such as chicken pox and measles, than is any system of ventilation yet contrived.

Dearth of Research Scientists

As we view the postwar picture we shall discern quickly that the number of competent research workers will have become greatly diminished during the war years, by death and retirements at one end of the age scale, and by almost complete cessation of replacement at the other. In our postwar research there will be a period of perhaps 10 years in which we shall have far fewer research workers than our institutional and industrial laboratories will need.—*Paul E. Klopsteg in Science.*

Vermilye reports (*J. Am. Med. Assn.*, Sept. 22) the successful treatment of more than 200 cases of respiratory infection (pneumonia, bronchitis, sinusitis, rhinitis, tonsillitis, etc.) with a highly concentrated solution of penicillin, inhaled as a mist (aerosol penicillin). Some of his cases had proved refractory to penicillin by muscular and intravenous injection, yet were completely relieved by inhalation of the drug which builds up a much higher concentration of the antibiotic agent at the site of the infection than can be obtained by systemic administration. Further, the simple technic of inhalation can be accomplished in the office or the home whereas for intravenous administration hospitalization is desirable.

On the whole the program of diphtheria immunization has been the most creditable of public health works. Only 15,323 cases of diphtheria were reported in this country last year and, of these, 1318 were in California, 1546 in South Carolina and 2031 in Texas. These three states furnished nearly one-third of the total. New York with a population greater than that of California and Texas combined reported only 330 cases.—*Am. J. Pub. Hlth.*

As is well known, cows that have been unable to stand for a few days because of disease or injury often refuse to get up or to stand when helped up after they are able to do so. Slings as a means of keeping them on their feet are notoriously unsatisfactory in this animal. An Iowa practitioner solves this problem by digging holes for the front and hind feet. The holes are of a depth that will enable the animal to clear the partition dividing them if she wishes, or to support part of her weight on the belly, when she wants to rest.

Local Public Health Organization

The responsibility for local public health service in the United States is divided among approximately 18,000 local governmental units and 70,000 school boards.

A committee representing the American Public Health Association, as a result of a study began in 1942 has made a report (381 pages) in which is set forth for each state the present status of local county health organization.

The committee finds that one-third of the nation lives in communities having no local health services, or health organizations ill equipped to supply a half dozen essential, primary services of public health that should be a function of government responsive intimately and personally to the needs of each community.

To provide local public health services for all of continental United States, the committee believes that 1197 local health units are required and that minimum basic local health services can be provided for $1.00 *per caput* per year. They compute that staffing these 1197 local health units will require 2,063 full time and 6,145 part time physicians; 26,390 public health nurses, 1,884 professionally trained sanitarians including engineers and veterinarians; 3,912 sanitarians not professionally trained; 8933 clerical workers; 3535 laboratory workers, 447 full time and 3,342 part time dentists; 533 health educators; 4,267 dental hygienists and 2,392 other employees. Total, 54,357 full time and 9,508 part time.

Losses in Young Pigs

In 1925 the experiments, out of which the McLean County system of swine sanitation was developed, were completed. They had occupied 10 years; four years in the laboratories of the Zoological Division of the Bureau of Animal Industry in Washington and six years in the field in Illinois.

The loss of pigs from farrowing to market age at that time was 45% in Illinois and throughout the cornbelt. This loss was reduced on the large numbers of farms cooperating in the project to an average of 23.8%. This 23.8% was due to exposure, overlaying and stillbirths 17.2%, accidents at pasture 5.29%, cholera 1.5%. These factors are largely factors of breeding, feeding and management not susceptible of control by sanitary measures.

After 20 years the general average loss of pigs from farrowing to market time is 33⅓%. It has been reduced on the average just over 0.5% yearly since 1925. Stressing the application of knowledge already available to swine raisers is probably more important, at this time, than the development of new knowledge through research. For example, additional research is not needed to prevent losses from cholera, from chilling or to institute feeding practices that will give pigs a better start in life. More information is needed about enteric ailments, erysipelas and brucellosis, but the principal reductions in that loss of 33⅓%, if they are achieved, will have to be from wider application of measures already well understood. Inherent in such measures surely lies a possibility of a saving in swine mortality twice as great as that accomplished by all means, new and old, in the past score of years.

These animals were all of approximately the same age, when the photograph was taken on an Iowa farm. The individuals varied in weight from 170 to 325 pounds. Of more than 1200 farrowed the preceding winter only about 225 remained alive. None had been sold. Swine erysipelas was responsible for the abnormal loss. Perhaps one-third of the drove was fit for market but the owner had not shipped them because he was so disgusted with his "luck" with this crop. Most of the animals had swollen joints and more than half of them were in poor condition despite good feeding practices. The owner had expended more than $10,000 in the past few years to improve the sanitation of the premises. The entire feed lot, about one acre in extent, and the sheds and farrowing house are floored with concrete. This type of erysipelas, where the pigs began to die when a few days of age and losses continued for several months, with stunting of most of the animals that survived, was common in Iowa in 1944. The man with the I-told-you-so look on his face is Dr. John S. Koen of Storm Lake, Ia.

Penicillin Effective in Swine Erysipelas

In an experiment at the Mayo Foundation, 80 mice were infected with *Erysipelothrix rhusiopathiae;* 40 were given penicillin and 40 were not treated. Of the former 38 survived, of the latter group all succumbed. It was concluded that the swine erysipelas organism is highly sensitive to the action of penicillin; indicating that this drug may be useful in treatment of the disease in swine and other animals and in man.

Dichloro Diphenyl Trichloroethane

DDT has been the beneficiary, or the victim, of oceans of publicity, great hopes and fantastic predictions. In the armed services it has played a tremendous role in insect control and disease prevention. Although the Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture has conducted many and extensive tests of DDT for 2½ years the knowledge of its use on farm crops and animals is yet far from complete.

Limitations on its use are:

1. The formulation of an insecticidal dust incorporating DDT is a manufacturer's job. It should not be attempted without adequate equipment and the formula varies for different purposes from a DDT strength of 0.1 to 10%.

2. It is somewhat poisonous to warm blooded animals and should not be so used as to leave a residue on grain or forage that is to be consumed by animals, or fruit or vegetables that are to be used for human food.

3. It is not effective against all insects and against certain other important pests it acts more slowly than does rotenone or pyrethrum.

4. It kills honey bees and may prevent the pollination of certain crops. It also kills some insect predators that hold in check harmful insects.

5. When dissolved in various petroleum oils, xylene and other solvents it is readily absorbed through the skin and therefore dangerous to animals. Persons using such solutions require protection from them.

6. It is destructive to squash, cucumbers and related plants. Added to the soil at the rate of 25 pounds or more to the acre DDT retards the growth of flowers, vegetables and other plants. Its persistence in the soil is not known. There is a possibility that in time a harmful amount might be built-up in garden soil from frequent sprayings or dustings.

7. Against the screwworm, cattle grub, chigger and poultry mite DDT affords little or no protection. Its efficacy against ticks, spiders, cockroaches and some ants is low or doubtful. Its value in the control of fleas and scab mites of animals is undetermined. Although it is a perfect measure for the eradication of lice in man, the proper dilutions for its use against lice affecting domestic animals has not yet been determined. It is ineffective against botflies of horses and sheep and heel flies of cattle.

8. DDT is highly poisonous to fish and this fact must be taken into consideration in area mosquito control projects.

The experience of the Army and Navy has demonstrated the marvelous effectiveness of DDT for the control of flies, mosquitoes and bed bugs in buildings and for lice in clothing. It is equally effective against stable flies and sand flies. It may be applied to the interior of buildings as a watery emulsion or oily solution at low cost and practically rid the structures of these pests for weeks. A 10% dusting powder is detructive to the brown dog tick, fleas and cockroaches, but requires considerable time to destroy these pests.

A spray, in which DDT and rotenone are combined, is superior to the arsenic dip for cattle ticks in tropical regions where labor sufficiently skilled to employ the dipping vat, is difficult to obtain.

New uses for DDT are still being discovered and new and better methods of employing it are being developed by the U. S. Department of Agriculture and the U. S. Public Health Service. It is not a universal insecticide and it is not harmless, but it gives promise of being a nearer approach to both goals than has heretofore been attained by any other agent in its field.

* * * *

Over two million doses of desiccated, attenuated goat virus (K.A.G. virus) have been used in one year in Tanganyika Territory (Africa) for immunizing cattle against rinderpest.

* * * *

Cattle Sprayed with DDT Fatten Faster

Tests were conducted in Kansas on about 6,000 head of cattle with DDT employed to eliminate flies. Fly count was reduced sharply wherever it was used. Cattle herds on which the fly count had ranged from hundreds to well over a thousand horn flies per animal grazed contentedly with but five to ten flies per animal. Barns which have sounded like beehives were made practically free of flies. Cattle on which raw places persisted, due to action of the fierce horn flies, were relieved, and such spots healed soon after application of DDT. Bulls which were literally covered with lice were freed of the parasite with one application. Cattle on feed stopped stamping, bunching and seeking relief soon after treatment.

Stockmen professed that the use of DDT is going to revolutionize the cattle feeding industry in that cattle can be fed successfully during the fly season. Some reported that sprayed cattle were making better gains than those not sprayed, hair was much brighter looking and the animals were much more restful.—*Nat'l Provisioner.*

The Relation of Veterinary Medicine to Human Health*

It is a truism that veterinary medicine is an essential component of medical research. Our vastly improved knowledge of disease—both in man and in animals—is due, in large measure, to the research investigations and achievements of many eminent scientists, including both the veterinarian and the physician. Numerous medical discoveries of epoch-making character have come from studies and observations of the diseases of lower animals.

The first disease, definitely proved to be due to bacteria was anthrax, a common malady of lower animals, that occasionally occurs in man. Medical bacteriology essentially dates from that finding.

The classic studies of Pasteur, which served so significantly in the development of modern means of immunization, were largely among diseases common to animals. I might also point out that our entire knowledge of insects, as vectors of human disease, largely stems from the work of Smith and Kilborne, one a physician and the other a veterinarian. These two men, working in the Bureau of Animal Industry of the United States Department of Agriculture, proved that Texas fever or piroplasmosis of cattle, analogous to malaria in man, is transmitted by ticks. This gave great impetus to the development of modern medical entomology.

The first specific knowledge that such a thing as a filterable virus could cause disease in man and animals resulted from studies with aphthous fever of cattle. Since that discovery, filtrable viruses have come to be recognized as one of the most important of recognized disease-producing agents, responsible for such human diseases as poliomyelitis, influenza and many others.

Of diseases transmissible from animals to man rabies is a classical example. Rabies is a disease primarily of lower animals, particularly dogs. When the disease is transmitted to man, it produces one of the most dreaded of all maladies.

It is a safe assertion that if the disease could be eradicated among dogs, its human prototype would cease. The problem of control and eradication of rabies, therefore, is a veterinary matter—but one of tremendous interest and importance to human medicine. Although we know more about rabies than we do about many other diseases, its prevention is still a major problem in the United States. We know its cause, how it is transmitted, the mechinism of the production of the disease after infection has occurred, how to diagnose it, and what measures would control and eliminate it if initiated and effectively carried out. Thus far, however, it has not been possible to institute a unified national program for its over-all control.

One development of special significance in connection with rabies is the recent requirement of the Bureau of Animal Industry of the Department of Agriculture, that all rabies vaccine for immunization of dogs pass the potency test developed by Doctor Habel of the United States Public Health Service.

Vaccination of dogs is of definite value in the control and prevention of rabies. However, its use is no justification for the elimination or relaxation of such well-recognized, regulatory measures as registration of dogs, proper disposal of strays, leashing, muzzling and isolation and restraint of suspected cases of rabies or of animals exposed to the disease. Rabies is a controllable disease, and *could* be actually eliminated, but the extent of progress would be dependent upon widespread official and public support and coöperation in the initiation and enforcement of an effective program.

Another example of a disease of animals that occasionally occurs in man with serious results is equine encephalomyelitis. The veterinary research investigations in connection with this disease have resulted in several very important contributions to medical science generally. Equine encephalomyelitis has existed in the United States for many years, but it was not until 1931 that the cause was definitely proved to be an ultra-microscopic filterable virus. Two years later, veterinary research studies demonstrated that two immunologically distinct viruses of the disease exist in this country—"western" and "eastern" type. Since that time a third, or "Venezuelan" type, has been identified, but so far it has not occurred in the United States.

Considerable headway has been made with regard to the transmission of equine encephalomyelitis. At first, it was assumed that the disease was spread both through direct and indirect contact, but studies made in the Army Veterinary Service led to the discovery

*Adapted from an interview with Brigadier General Raymond A. Kelser, Director of the Veterinary Division, Office of the Surgeon General, U. S. Army, on the series: "The Doctors Talk It Over," sponsored by Lederle Laboratories, Inc.

that the disease is transmitted by mosquitoes. This discovery was of prime importance. It not only demonstrated an insect vector, but it constituted a new incrimination of the mosquito as the carrier of another virus disease. It was also the first instance wherein mosquitoes were proved capable of transmitting an essentially neurotropic disease, that is, a disease that affects the nervous system.

Up to the present time more than a dozen species of mosquitoes have been proved capable of transmitting the disease. These studies also led to the finding that "St. Louis" encephalitis, a different, but similar, disease of primary importance in man, can be transmitted by mosquitoes. It seems reasonable, then, to conclude that the seious outbreak of this disease in the St. Louis area 12 years ago was mosquito-borne.

The ready adaptation of many of the filterable viruses to different hosts and different tissues, with great variation in the disease manifestations, lends weight to the possibility that there may be a very close connection between the various types of encephalitis in man and the lower animals. The virus of yellow fever is a good example. By successive intracerebal passage through series of mice, the virus is converted from its viscerotropic character to a neurotropic type, and the clinical disease produced shifts over to an encephalitis. This points out the possibility that some of the virus diseases of man and animals which are similar, but thought to be caused by entirely different viruses, may be more closely related etiologically than is now assumed.

Equine encephalomyelitis vaccine is one of the most reliable biological products available. It affords a means of preventing the disease without eliminating the mosquito. The experience of the Army with this product is noteworthy. Since 1939, all Army animals have been immunized annually with the vaccine. As a result, there has not been a single case of encephalomyelitis in Army animals, despite the fact that the virus of the disease has continued to exist widespread throughout the United States, as evidenced by the occurrence each year of the malady among civilian animals in many parts of the country.

[At this point the General was asked if care of the animal population of the Army was the only function of the Veterinary Corps.]

During World War II the corps performed an outstanding task in safeguarding the meat and dairy products supply of the Army. Approximately 38% of the soldier's ration consists of meat, meat-food and dairy products. These foods, while the most essential items of diet, are also the most perishable and most dangerous to human health, if spoiled. Thus, the Veterinary Corps' activity in this connection has been of enormous importance in maintaining health in the armed forces.

During the recent war the Veterinary Corps inspected billions of pounds of meat and dairy products in the United Statees and the various theatres of war. The effectiveness of the task performed is attested by the fact that throughout the war period no serious outbreaks of food-borne disease occurred among our troops. I think this record emphasizes the extent to which veterinary medicine walks hand in hand with the other fields of medicine in preventing human disease. Since the field of the medical sciences covers a broad expanse, many of the problems and difficulties of one branch are also those of another branch. The achievements of one often shed light on questions presented in the other. As study and research in the realm of human medicine have contributed to the welfare of lower animals, so have observations and research in the field of veterinary science contributed to the welfare of mankind. This is as it should be. I am certain that the closer the alliance, the greater will be the benefits to both.

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Kneedler reports (*J. Am. Med. Ass'n*, Sept. 22) improvement in two cases of leucemia from medication with colchicine, and concludes as a result of his experience that this drug deserves further trial in this condition.

* * * *

The toxicity of gramicidin and the destruction of the red blood cells is the greatest limitation to its use. It has been discovered recently that the addition of formalin renders gramicidin less harmful without impairing its capacity to check the growth of bacteria.

* * * *

The effect of a sudden and severe check in the food supply of a flock of 500 Merino ewes due to lamb and in good condition was to precipitate 90 cases of pregnancy toxemia. With but two or three exceptions all affected ewes were carrying twin or triplet lambs.—*17th Ann. Rept. Coun. Scien. & Indus. Res.*, Australia.

* * * *

The records show that of 14,504,506 cattle slaughtered under federal meat inspection last (fiscal) year only 5,830 (0.04%) revealed any lesions of tuberculosis. Less than one-fourth of this number showed the disease to be sufficiently advanced to justify condemnation of the whole carcass. Swine tuberculosis (avian type) showed a slight increase over the preceding year.

Disease Hazards of the Dairy Calf*

From 20 to 40% of the dairy calves die before they reach weaning age. This is a serious handicap to the dairy industry, since the dairyman in many instances is barely able to raise enough heifer calves for replacements in his herd. He can't improve the quality of his cows and the average production in his herd if he is unable to cull his calves and select the best for replacements. All the effort to improve the strain by using better sires is largely nullified if he can make no selection of the calves for replacements, if he must keep all the calves he can raise whether from good cows or poor ones. There is little advantage to keeping records and thus knowing which are his best-producing cows, if for lack of replacements he cannot cull his poor cows and their progeny.

The diseases of calves to a considerable degree fall into three age groups—(1) from one day to one month of age, (2) from one to four months of age, and (3) from four months to one year of age.

The greatest loss of calves up to one month of age is due to infection. White scours, due to colon organisms, is prone to assume epidemic form in calves of this age. When the scours lasts more than a week many cases develop pneumonia. Calves that survive to reach the age of 25 to 30 days do not usually contract this type of infection.

Another cause of mortality in young calves is vitamin A deficiency. The symptoms of this ailment are much the same as those of infection; diarrhea, dehydration, stunting and frequently pneumonia. As a matter of fact, infection plays an important, though secondary, role in vitamin A deficiency and, in some measure, determines the symptoms.

A third cause of loss in calves during the first month is bad management; over feeding, irregular feeding, feeding cold milk, feeding milk too rich in butter fat, feeding from dirty pails, etc.

Sulfaguanidine gives good results in all forms of diarrhea in calves and acidolphilous milk will cut the losses materially. However, even with the best treatment, which includes blood transfusion from the dam and administering a pint of the dam's blood orally, the losses will be material, particularly in the epidemic type of the disease, where death often occurs in 24 to 48 hours after the onset of diarrhea.

The cause of this loss in dairy calves is not difficult to understand. It goes back to the management of the dairy cow and her calf. The mortality of calves in the beef breeds doesn't approach that of dairy calves. To give the dairy calf a chance at the start, the dam should be dried off six weeks before she is due to calve and should be well fed to replenish losses she has sustained owing to the drain of heavy milk production. The calf, when it arrives, should be treated like the valuable animal that it is. It should have a clean dry pen and preferably a separate pen. The pen need not be large; one six feet square with shelter is adequate. It should get the colostrum milk; that is its principal source of vitamin A and of anti-bodies. It should be fed regularly and always from clean vessels, as clean as those used for milk for the home. The milk should be warm when fed and of the proper amount. In the winter time the colostrum is very likely to be deficient in vitamin A, unless the cows are fed a ration containing good green, leafy hay and yellow corn. If the cows are not well fed the feed of the calf should be reinforced with this vitamin which is essential to disease resistance. When the diet no longer consists entirely of whole milk, care should be observed in preparing the feeding formula.

Of the ailments that affect dairy calves during the second month of life, coccidiosis is the most destructive. Coccidia normally inhabits the intestinal tract of all cattle, except calves for the first few days after they are born. Ordinarily they do no apparent harm, but when, under conditions unfavorable to the animal and favorable to the parasite, they increase in number to countless billions, they cause an intense hemorrhagic enteritis, bloody diarrhea and death. Filth and crowding furnish the necessary conditions for building up the colony of coccidia in any group of young calves. Since time is required to produce coccidia in harmful numbers, calves usually do not exhibit the symptoms of coccidiosis until they are 25 days of age or older. Cases of all degrees of severity occur even in the same group of calves. The most severe cases may die in five to seven days after the onset of bloody diarrhea but as a rule cases, even severe cases, persist for about three weeks and then die or slowly recover. Calves that recover from either mild or severe atacks usually developt a considerable degree of immunity.

Diagnosis is based upon the bloody diarrhea, rapid loss of flesh, unkempt appearance, the rear befouled with blood and feces and a

*Notes from an address by Dr. B. T. Simms, president-elect of the A. V. M. A., and newly appointed Chief of the Bureau of Animal Industry, U. S. Department of Agriculture, at the 33rd Annual Veterinary Short Course, Purdue University, Oct. 11 and 12, 1945.

nearly constant tenesmus. It is confirmed by finding the oocysts in the feces in great numbers. Treatment is almost futile after the bloody diarrhea appears since at that time the parasites are buried in cells of the mucous membrane safe from molestation by medicaments. Demulcients may contribute somewhat to the comfort of the animal and supportive treatment, including blood transfusion, gives the calf a better chance to live through the attack.

Astringents are recommended in the milder cases; powdered catechu in milk (two tablespoonfuls to the pint) being the one of choice. Blood transfusion is a useful supportive measure and saline solution (1000 to 2000cc daily) given intraperitonially is of value in combatting the severe dehydration induced by the copious diarrhea.

The lesions found on necropsy include emaciation, severe enteritis of the posterior bowel with long blood clots filling sections six to 20 inches in length. Sometimes the heart shows petechiate hemorrhages.

When the dairy calf has weathered the extreme hazards of its first month and survived the period of greatest danger from coccidiosis in its second to fourth months of life, it will face lesser disease enemies until the period of reproduction is reached. In this period, blackleg, rabies, in some sections anthrax, lungworms, distomiasis, occasionally tuberculosis, hemorrhagic septicemia and various other diseases and parasitisms combined, offer a lesser challenge to its life than does either coli infection in its first month of life or coccidiosis in the next three months.

Collection of Veterinary Vital Statistics Urged 26 Years Ago

There should be in this country, some central agency for the collection and prompt publication of statistical matter having to do with livestock diseases. The Bureau of Animal Industry reports on the progress of tick eradication, on the accredited herd plan, on meat inspection and on serum and virus production afford valuable data on detached problems of animal disease control; but an animal vital statistics service vastly more comprehensive—a general statistical service furnishing a constantly available gauge of the disease situation throughout the whole country—is greatly needed. The movement for such a service should be started at once by this association. This service might be established within the Bureau of Animal Industry, but there appear to be certain advantages in an unofficial agency, an enterprise of this association.—*From report of the secretary to the U. S. Livestock Sanitary Association, 1919.*

"Nutritional Wisdom"

When rats were given frequent access to purified minerals, vitamins, carbohydrates, fats and proteins, in separate containers, they made dietary selections which kept them in good health. For example adrenalectomized rats ingested large amounts of sodium chloride and thereby kept themselves alive and free from symptoms of insufficiency; parathyroidectomized rats ingested large amounts of calcium solutions, thereby keeping themselves alive and free from tetany; pancreaectomized rats ate large amounts of fats and avoided carbohydrates, thus helping to eliminate their symptoms of diabetes.—Rept. of Research Council on Problems of Alcohol, from *J. Am. Med. Assn.*

Equine Encephalomyelitis Summary—IV

Present indications point to reduced loss due to equine encephalomyelitis as compared with figures in any of the past several years. Total reported cases to August 31 were 901. The major epizootic areas in the central part of the country have reported comparatively few cases. On the other hand, there have been flare-ups in some of the South Atlantic States. Complete details as to these are not as yet available. A considerable increase in number of cases has been reported from parts of California. Weather unfavorable to the disease is the apparent explanation for the generally low incidence elsewhere.

	Reported 1-1-45 to 10-3-45		Reported 1-1-45 to 10-3-45
Ala.	11	Nevada	42
Ariz.	31	N. H.	0
Ark.	7	N. J.	0
Calif.	307	N. Mex.	23
Colo.	15	N. Y.	0
Conn.	0	N. C.	23
Dela.	0	N. Dak.	2
Fla.	16	Ohio	0
Ga.	0	Okla.	89
Idaho	32	Oregon	3
Ill.	89	Penn.	0
Ind.	39	R. I.	0
Iowa	106	S. C.	0
Kansas	121	S. Dak.	19
Ky.	0	Tenn.	0
La.	3	Texas	23
Maine	0	Utah	16
Md.	30	Vt.	0
Mass.	0	Va.	6
Mich.	2	Wash.	2
Minn.	104	W. Va.	0
Miss.	0	Wis.	13
Mo.	210	Wyo	0
Mont.	9		
Nebr.	169	Total	1562

Observations on the Resistance of Anthrax Spores to Heat

By C. D. STEIN and HERBERT ROGERS*
Washington, D. C.

A CONSIDERABLE amount of work on the resistance of anthrax spores to heat has been carried out by various investigators with somewhat conflicting results.

The early findings of Koch[1] and his coworkers, Gaffsky and Loeffler, who showed that the spores of *Bacillus anthracis* were destroyed by moist heat at 100° C. in 1 to 12 minutes, and by hot dry air at 140° C. in three hours, have been widely quoted in textbooks on bacteriology.

Verge[2] reported that steam under pressure was necessary for the destruction of anthrax spores, since they survived repeated boiling.

Malloch and Davis[3] reported that only rarely could they find any surviving living matter in fluid which had been raised to a temperature of 100° C. even for a short time, 20 to 30 seconds. As a result of studies with the spores of *B. anthracis*, they concluded that heating of anthrax spores in water to 100° C. or higher for the shortest practical time is almost certain to insure their destruction.

Malone and Shanley[4] found that spores from 14 different strains suspended in physiological saline resisted 80° C. for one hour; while 5 of 14 strains resisted 85° C. for one hour or more, and none of the 14 strains resisted 90° C. for one hour.

Murray[5] reported evidence based on extensive and well controlled experiments indicating that a temperature of 135° C. for 5 to 10 minutes was necessary to kill dry anthrax spores in the absence of moisture, whereas under moist conditions, spores suspended in 0.8% saline solution were killed in 5 to 10 minutes at a temperature of 100 to 105° C.

Oag,[6] in studies on the resistance of spores to dry heat, showed that spores of *B. anthracis* are killed in 20 to 30 seconds at 400° C. whereas at 120° C. an hour exposure is necessary to kill. He also demonstrated that the time necessary to fix a film of spores is very much less at any given temperature than that required to kill the organisms.

Jones[7] reported that the spores of *B. anthracis* are not as resistant to heat as is generally believed. Most of the spores contained in industrial material were killed by heating to 80° C. for two minutes. The spores of two or three strains were likewise destroyed by heating at 80° C. for 10 minutes.

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Early Investigations by the Bureau

In experiments carried out during 1917 and 1918 by Dr. F. W. Tilley,[8] a Bureau investigator, to determine the effect of heat upon anthrax spores in soak water from tannery hides and skins, it was shown that as a rule momentary heating at 100° C. is sufficient to destroy anthrax spores, but in the case of certain highly resistant strains the organisms were not destroyed; one or two spores out of 500 or 600 in the heated effluent survived heat at 100° C. for one minute. Three minutes' heating at 100° C. was sufficient to insure sterility. Heating at 90° C. for 15 minutes destroyed the spores in all instances. Heating at 80° C. for 30 minutes greatly diminished the number of spores but did not destroy all of them.

Purpose of Investigation

During the past eight years this laboratory had accumulated a large number of virulent cultures of *B. anthracis* and anthrax blood swabs from outbreaks of different species of animals in widely separated areas. Before discarding these cultures and swab specimens which had been used in other experiments, the authors decided to test their resistance to heat and thus obtain additional information on this point. The experiments recorded in this paper were designed and carried out primarily to determine if the methods commonly used in laboratories for sterilization are effective for the destruction of anthrax spores.

Material and Methods in General

The cultures of *B. anthracis* used in these experiments were virulent strains isolated direct from different species of animals in anthrax outbreaks in widely separated areas. The anthrax blood swabs were made direct from field cases of anthrax. The swabs were allowed to dry, which permitted sporulation, and were held at room temperature for varying periods.

The cultures of *B. anthracis* were grown on plain agar slants and were held at room temperature from two to three weeks or longer to permit sporulation. The spores were washed off the agar with either 0.85% physiological saline or sterile, distilled water, and the spore suspensions were thoroughly agitated and filtered through sterile cotton to remove the

clumps. Heavy or light suspensions of the spores were thus prepared for heating.

Suspensions of spores from blood swabs were prepared by soaking the dried swabs in 0.85% physiological saline. Plating tests were made from suspensions to determine if spores were viable and the approximate number of spores in such swab suspensions.

Subsequent to exposure to heat, the spore suspensions were tested for viability by seeding the material on agar plates or slants and by adding nutrient broth to the receptacles containing the heated suspensions of spores.

In exposing the spores to heat, the usual equipment and methods employed in laboratories for routine sterilization were used, namely, (1) water bath with automatic temperature control, (2) vigorous boiling in pyrex flasks, (3) Arnold steam sterilizer adjusted to maintain a given temperature with variation of not more than one degree, (4) autoclave (steam under pressure), and (5) dry heat electric sterilizer adjusted to maintain a given temperature with variation of not more than one degree.

In the use of these different methods, the anthrax spores were exposed to heat for a much shorter period than is commonly employed in routine sterilization, to determine if the reduced period of exposure would destroy the spores.

Further details on the technic followed in the various tests are described under each experiment.

EXPERIMENT A.—Effect of Heating Saline Suspensions of Anthrax Spores at 80° C., 99 to 100° C., and by Boiling.

In this experiment a light suspension of virulent spores from dried blood swabs and a fairly heavy suspension of virulent spores from an agar slant culture were tested for their resistance to heat at 80° C., 99 to 100° C., and by boiling for different periods.

The spore suspensions in 7cc amounts were carefully pipetted into sterile pyrex tubes of the same size and thickness (15 x 150mm) so as not to contaminate the upper portion of the tubes. The tubes were then placed in a preheated water bath with an automatic temperature control device, along with control tubes of the same size containing a thermometer immersed in 7cc of normal saline for a constant check on temperature during heating. After the suspensions in the tubes had attained the desired temperature of 80° C., or 99 to 100° C., which required from three to five minutes, they were then held at these temperatures for fixed periods, quickly removed, cooled, and 0.2cc amounts were seeded into nutrient broth and on agar plates, and finally incubated at 37° C. for three to seven days.

In the boiling tests, spore suspensions in 2cc amounts were rapidly delivered into pyrex flasks containing 100cc of boiling water and were boiled vigorously for one, two, or three minutes. Subsequent to boiling for these fixed periods, 1cc amounts were immediately seeded into broth and small amounts onto agar plates, and incubated.

The results of this experiment, which are shown in Table I, indicate that both spore suspensions tested resisted a temperature of 80° C. from 5 to 30 minutes, were destroyed in two minutes at 99 to 100° C., and in one to three minutes by plunging into boiling water.

EXPERIMENT B.—Effect of Heating Vegetative Forms, Sporulating Forms, and the Spores of B. anthracis at 80° C., 98 to 99° C., and by Vigorous Boiling.

In this experiment three saline suspensions of the same strain (SDR-44), namely, (1) vegetative forms in the blood from a guinea pig dead of anthrax, (2) sporulating forms from a 48-hour culture, and (3) spores from a dried blood swab direct from a field case, were tested for their resistance to heat at 80° C. for 30 minutes, 98 to 99° C., for two minutes and three minutes, and vigorous boiling for two minutes.

The method of exposing to heat was the same as that used in Experiment A, except that in the boiling test, 1cc suspensions of spores were added to 50cc of sterile water at room temperature, brought to the boiling point, and then boiled for two minutes. It required three minutes for the suspensions to attain a temperature of 80° C., five minutes to attain 98 to 99° C., and 1½ minutes to reach the boiling point.

The results of this experiment, which are shown in Table II, indicate that the vegetative forms were destroyed by heating to 80° C. for 30 minutes, to 98 to 99° C. for two minutes, and by boiling for two minutes. On the other hand, numerous spores survived after heating the suspensions of sporulating forms and spores at 80° C. for 30 minutes, but after heating at 98 to 99° C. for two or three minutes only a few spores survived, whereas vigorous boiling for two minutes destroyed all the spores.

EXPERIMENT C.—Resistance of Spore Suspensions of Different Densities to Heating in the Arnold Steam Sterilizer, to Live Steam Under Pressure, and to Boiling.

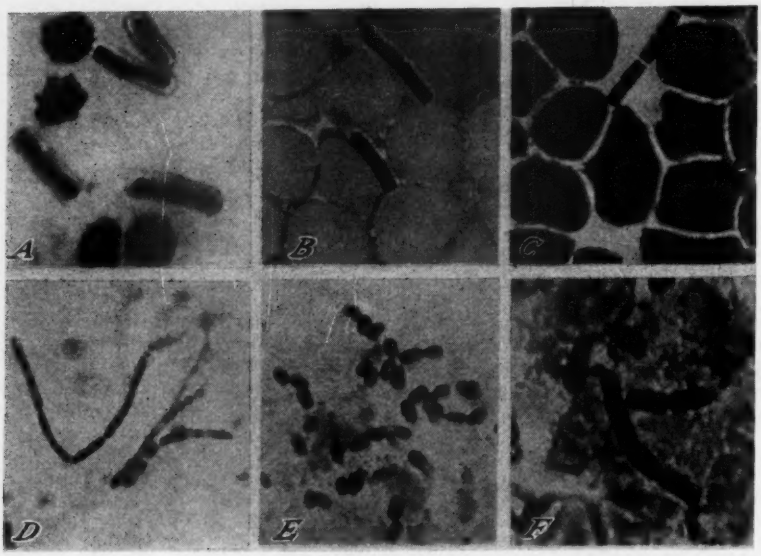
In this experiment the resistance of spore suspensions from 7 different strains prepared with distilled water and adjusted to different

densities ranging from No. 3 to No. 5 in accordance with a McFarland nephelometer was tested.

For exposing the suspensions to heat in the Arnold steam sterilizer, 3cc of each of the seven different suspensions were pipetted into the pyrex tubes of uniform size and thickness, which were plugged with cotton. Control tubes containing the same amount of distilled water, with thermometers inserted for registering maximum temperature and variations of temperature, were also placed in the Arnold sterilizer at the same time. After turning on the steam, five minutes was required to bring the temperature of the spore suspensions in the tube to 100° C. The suspensions were then heated for fifteen minutes at 100 to 101° C., quickly removed from the sterilizer, and cooled. Culture tests of the heat suspensions were then made by seeding 0.2cc on agar slants, and by adding 5cc of nutrient broth direct to the tubes in which the material was heated.

For exposing to heat in the autoclave, 10cc of the spore suspensions in pyrex tubes of equal size and thickness, plugged with cotton, were used, with a similar size tube containing the same amount of the distilled water, with a thermometer inserted for checking the maximum temperature. After the temperature of the autoclave had attained 120° C. and 15 pounds pressure, the tubes were held at that point for fifteen minutes and were then removed and subjected to the same culture tests as previously mentioned. It required five minutes for the temperature in the autoclave to reach 120° C. or 15 pounds pressure, and when the steam was turned off it required ten additional minutes for it to return to zero pressure.

In the boiling tests, 25cc suspensions were pipetted into pyrex flasks which were plugged with loosely fabricated cotton plugs and placed on a preheated hot plate, and after attaining the boiling point, which required about 1½ to two minutes, were boiled vigorously for five minutes. The boiled suspensions were cooled and tested for the presence of viable spores by seeding 0.5cc onto agar slants, and by the addition of 50cc of nutrient broth to the flasks containing the heated spores.



STAINED ANTHRAX BACILLI AND SPORES

A. Bacilli, in sheep (methylene blue) x 1700. B. Bacilli, guinea pig blood (Giemsa) x 1600. C. Bacilli, guena pig blood (Hasting's) x 1600. D. Sporulating organisms from spleen (bovine field case) x 1400. E. Anthrax spores from culture x 1900. F. Bacilli in blood, stained with methylene blue (photograph taken with polarized light) x 2000.

The results of this experiment, which are given in Table III, indicate that the spores were destroyed by each of the three methods.

EXPERIMENT D—Effect of Boiling and Dry Heat on Spores Contained in Dried Blood Swabs.

The spores suspensions used in the boiling tests were prepared by soaking the blood swabs in 0.85% saline. Culture tests were made from the suspensions before boiling and all the suspensions were positive for anthrax.

In testing the resistance of the spores to boiling, 5cc of the suspensions made from 12 swabs were each pipetted into pyrex flasks containing 25cc of nutrient broth. The flasks were immediately placed on hot plates, brought to the boiling point, which required 1½ minutes, and then boiled vigorously for three minutes. The boiled broth suspensions of spores were cooled, seedings were made on agar plates, and the suspensions and plates were then placed in the incubator for tests for viability.

In the tests to determine the effect of dry heat on dry spores, 18 dried blood swabs were used, six of which were in duplicate, and were also tested for their resistance to boiling.

The dried anthrax blood swabs in glass containers were placed in an electric dry air sterilizer adjusted so as to maintain a temperature of 149 to 150° C. A glass window in the door of the sterilizer permitted observation of temperatures registered by control thermometers during the heating.

After the material was placed in the sterilizer, 10 minutes was required for the temperature to reach 149° C. The swabs were then heated for one hour at 149 to 150° C. Following heating, the swabs were removed from the glass containers and each was immersed in 15cc of nutrient broth and incubated at 37° C. for a week to test for the presence of anthrax. Negative results were obtained in all instances, as is shown in Table IV.

EXPERIMENT E.—Resistance of Dense Suspensions of Spores to Moist Heat and Dry Spores to Dry Heat.

For this experiment spore suspensions of the density of a McFarland No. 4 in distilled water were prepared from 24 different cultures, 12 in group A and 12 in group B. Dried spores from the same 24 strains were prepared either by making smears of the spore suspensions on sterile glass slides, allowing to dry without fixing and immersing in large glass tubes or by pipetting 0.2cc of the spore suspensions into pyrex test tubes and thoroughly drying in the incubator. Spores from the 12 cultures in group B were exposed to heat for a shorter period than the 12 cultures in group A.

The methods of exposure to heat and culture tests on heated spores for the presence of anthrax were in general the same as those previously described in connection with similar preliminary experiments.

The results of this experiment indicate that heavy suspensions of virulent spores from the 12 different strains in group A were killed in 10 or 15 minutes at 100-101° C. in the Arnold sterilizer; in 15 minutes in the autoclave at 15 pounds pressure and by vigorous boiling for five minutes while dried spores from the same 12 strains were destroyed by dry heat at 149 to 150° C. in 60 minutes.

In group B heavy suspensions of spores from six of the 12 strains tested were destroyed by heating at 90 to 91° C. in the Arnold sterilizer for 60 minutes, while suspensions of spores of the same density from all 12 of the same strains were destroyed in five minutes in the Arnold sterilizer at 100 to 101° C., in five minutes in the autoclave at 15 pounds pressure, and in three minutes by vigorous boiling. Dried spores from the above 12 strains, however, were not destroyed by dry heat at 149 to 150° C. for 30 minutes.

Summary

In a series of experiments carried out to determine the resistance of anthrax spores to moist and dry heat, using methods commonly employed by laboratories for routine sterilization but exposing the spores to heat for a much shorter period than is generally the practice, it was found that:

1. In exposure to heat in a water bath, spores from one strain suspended in physiological saline resisted 80° C. for five to 30 minutes, but were destroyed in at least two minutes at 99 to 100° C. and in one to three minutes by plunging immediately into boiling water; while numerous spores from a second strain resisted 80° C. for 30 minutes, only a few spores survived at 98 to 99° C. for two or three minutes, and none survived after vigorous boiling for two minutes.

2. In the Arnold steam sterilizer at 100 to 101° C., the spores from 31 strains were destroyed in from 5 to 15 minutes, but at 90 to 91° C. the spores from only 6 of 12 strains were destroyed in 60 minutes.

3. In the autoclave at 15 pounds pressure (120° C.) the spores from 31 strains were destroyed in from 5 to 15 minutes.

4. By vigorous boiling the spores from 43 different strains were destroyed in three to five minutes.

5. Dry spores from 30 different strains were destroyed by dry heat at 149 to 150° C. in 60 minutes, while the dry spores from 12 strains resisted dry heating at the same temperature for 30 minutes.

References

1. Koch, Gaffsky and Loeffler, Versuche über die Verwerthbarkeit heisser Wasserdämpfe zu Desinfectionszwecken, Mitt. a.d.k. *Gesundkeitssamt*, Vol. 1, p. 322. 1881.

2. Verge, J., Sur la resistance a la chaleur des spores charbonneuses Compt. rend. Soc. de Biol, 87, p. 1318. 1922.

3. Malloch, A., and Davis, A. M.: Preliminary note on resistance to heat of *B. anthracis*, Proc. Roy. Soc., London 72, p. 493. 1903.

4. Malone, R. H., and Shanley, E.: Resistance of *B. anthracis* spores to high temperature, Proc. & Tr. Roy. Soc., Canada (ser. 33) 9 (sect. 4), p. 85. 1915.

5. Murray, T. J.: Thermal death point II. spores of *B. anthracis*. *J. Infect. Dis.*, 48, pp. 457-467. 1931.

6. Oag, R. K.: Resistance of bacterial spores to dry heat. *J. of Path. & Bact.*, 51, pp. 137-141. 1940.

7. Jones, E. R.: Isolation of *B. anthracis* from industrial material with special reference to resistance of spores to heat. *J. Path. & Bact.*, 54, pp. 307-314. 1942.

8. Report of the Chief of the Bureau of Animal Industry, U. S. Dept. of Agriculture, p. 51. 1918.

TABLE I—RESULTS OF CULTURE TESTS ON ANTHRAX SPORES AFTER EXPOSURE TO HEAT

Strain of *B. anthracis*	Material Heated	Heated for indicated number of minutes at 80° C.[1]						at 99 to 100° C.[2]											By Boiling[3]		
		5	10	15	20	25	30	2	4	5	7	9	11	13	15	17	21	23	30	1	2	3
Bovine R.S.D.—40	7cc of light spore suspension in normal saline from dried blood swab	+	+	+	+	+	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Bovine R.S.D.—40	7cc of a heavy spore suspension in normal saline from agar slant	+	+	+	+	+	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

[1] Required 3 minutes for spore suspension to attain a temperature of 80° C.
[2] Required 5 minutes for spore suspension to attain a temperature of 99° C.
[3] Spore suspension plunged immediately into boiling water.
+ indicates resistance of spore suspension; — indicates spore suspensions destroyed.

TABLE II—RESULTS OF CULTURE TESTS WITH HEATED VEGETATIVE, SPORULATING, AND SPORE FORMS OF *B. anthracis*

Material Heated	Heated[1] at 80° C. in water bath for 30 min.	Heated[2] at 98-99° C. in water bath for 2 min.	Heated[2] at 98-99° C. in water bath for 3 min.	Vigorous boiling[3] in pyrex flask for 2 minutes.
Strain SDR-44 (vegetative forms in blood suspension from guinea pig dead of anthrax)	—	—	—	—
Strain SDR-44 (sporulating forms from 48-hour culture of *B. anthracis*)....	+++	+	+	—
Strain SDR-44 (spores from dried blood swab direct from field case).....	+++	+	+	—

[1] Required about 3 minutes for suspension to attain a temperature of 80° C.
[2] Required about 5 minutes for suspension to attain a temperature of 98 to 99° C.
[3] Required about 1½ minutes for suspension to attain the boiling point.
+++ numerous colonies on agar plates; + very few colonies on agar plates; — no colonies on agar plates.

TABLE III—RESULTS OF CULTURE TESTS ON THE RESISTANCE TO HEAT OF ANTHRAX SPORE SUSPENSIONS OF DIFFERENT DENSITIES

B. anthracis strains tested		Density of suspension (McFarland standard)	Heated[1] in Arnold steam sterilizer at 100-101° C. for 15 min.	Heated[2] in autoclave at 15 lbs. pressure for 15 min.	Boiled[3] for 5 min.
Number tested	Source				
2	Bovine	No. 3	—	—	—
2	Bovine	No. 4	—	—	—
1	Bovine	No. 5	—	—	—
1	Porcine	No. 5	—	—	—
1	Human	No. 5	—	—	—

[1] Required 5 minutes to raise temperature of the suspensions to 100° C.
[2] Required 5 minutes to attain 15 pounds pressure and 10 minutes to return to zero.
[3] Required 1½ to 2 minutes to attain the boiling point.
— indicates spores destroyed.

TABLE IV—EFFECT OF BOILING AND DRY HEAT ON ANTHRAX SPORES CONTAINED IN DRIED BLOOD SWABS

Number of swab specimens tested	Identification number of anthrax blood swabs	Results of culture tests after exposure to heat	
		Spore suspensions boiled[1] for 3 min.	Dry spores on swabs subjected to dry heat[2]; 149-150° C. for 60 min.
6	32, 35, 36, 39, 53 and 58	—	—
6	31, 34, 38, 40, 52 and 61	—	....
12	2, 7, 10, 16, 17, 21, 24, 25, 26, 29, 43 and 47	....	—

[1] Required 2 minutes to reach boiling point.
[2] Required 10 minutes for temperature in hot air oven to reach 149° C.
— Indicates spores were destroyed; .... indicates not tested.

TABLE V—RESISTANCE OF DENSE SUSPENSIONS OF ANTHRAX SPORES TO MOIST HEAT AND DRY ANTHRAX SPORES TO DRY HEAT*

B. anthracis strains tested		Results of culture tests for anthrax after exposure to heat									
		Arnold steam sterilizer				Autoclave		Boiling		Hot air sterilizer	
		90-91° C.		100 to 101° C.		15 lbs. pressure				149 to 150° C.	
Number tested	Source	60 min.	5 min.	10 min.	15 min.	5 min.	15 min.	3 min.	5 min.	30 min.	60 min.
					Group A						
7	Bovine			—	—		—		—		—
1	Ovine			—	—		—		—		—
1	Porcine			—	—		—		—		—
1	Equine			—	—		—		—		—
1	Canine			—	—		—		—		—
1	Human			—	—		—		—		—
					Group B						
5	Bovine	+	—				—		—		+
4	Bovine	—	—				—		—		+
1	Equine	+	—				—		—		+
1	Ovine	—	—				—		—		+
1	Porcine	—	—				—		—		+

* Density of spore suspensions—No. 4 (McFarland standard).
+ indicates resistance of spores; — spores destroyed.

Clinical Reports

Incarcerated Umbilical Omental Hernia in a Dog

April 6th, 1945, a four-year-old female Pekingese was presented for treatment. The owner stated that there was "some sore or injury on the abdomen of the animal."

By palpation and observation a diagnosis of irreducible umbilical hernia was made. The hernia was oval in outline—approximately three by four centimeters—and protruded nearly 2½cm below the abdominal floor.

With the consent of the owner an operation was performed. The dog was placed on the operating table in dorsal recumbency. An area three inches in diameter was shaved and washed with soap and water; then cleansed with 1-1000 solution of bichloride of mercury for five minues—a thin layer of cotton saturated with the same solution was placed over the area until the operation was begun.

Sterile shrouds were placed about the operative area. The base of the hernia was anesthetized by infiltrating it with 2% procaine hydrochloride; 6cc being used. Two corresponding eliptical incisions 4 centimeters long were made enclosing the hernia. As the skin was very thin directly over the hernia, careful dissection was essential. Blunt dissection was used when possible.

As the operation progressed it became apparent that the hernia contained only omentum. The omentum was darkened on one side by a large blood clot. When the hernial contents had become entirely dissected away from the skin it was found that the omentum had been forced through an umbilical opening approximately 0.5 centimeter in diameter. The omentum on the outside of the abdominal cavity was excised and a purse-string suture of No. 00, 20-day, chromic catgut was used to close the umbilical opening.

Surgical sulfanilamide was sprinkled on the operative area before closing the skin incision with five interrupted silk sutures. A sulfanilamide pack was placed over the area and taped in place. The dog was dismissed from the hospital but returned in four days for removal of the skin sutures. Recovery was uneventful.

At no time during the operation did the dog evidence the least sign of pain. Apparently anesthesia was complete and simplified the operation and post-operative care of the animal.

WALLACE L. ANTHONY

Kansas City, Kan.

A Practical Method of Spaying Heifers

While working with Drs. Meads and Ratliff of Claremore, Oklahoma, I had the opportunity of assisting in spaying 68 head of Hereford heifers. These heifers were for the most part nine to ten months of age. They had grazed with their mothers during the preceding summer. When about six months of age they had been taken from their mothers and allowed to run on the grass during the winter, the grass being supplemented by one pound of cottonseed meal per head per day. Their average weight was about 550 pounds.

The heifers were confined in a corral on the day preceding the operation so that the rumen and intestines would not be filled with feed, and the ovaries could be more readily found. The animals were driven into a squeeze chute one at a time. Immediately upon entry into the chute the heifer's head was securely fastened by an iron rod which passed over the neck just back of the ears. Another rod was passed over the region of the nose about two inches posterior to the nostrils. The sides of the chute were then squeezed up tight to prevent her from lying down. A lariat was passed over the sides of the chute and under the body in the region of the flanks and tightened until the hind feet barely touched the ground. Another lariat was looped around the left hind limb in the region of the first phalanx and pulled taut to extend the limb to its fullest extent and prevent kicking.

After the heifer was securely confined an assistant clipped the hair in the region of the left paralumbar fossa with hand clippers. The clipped area was then thoroughly brushed with a stiff bristled brush and the area painted with tincture of iodine.

The hands of the operators were prepared for the operation by first scrubbing them thoroughly with soap and water, then cleaning the fingernails, after which they were rinsed in plain water and then washed thoroughly with a 1% creolin solution. The instruments had been sterilized for the operation by boiling.

A table had been constructed near the chute on which the materials to be used in the operations could be placed. Two pails containing 1% creolin solution were placed on the table so that the doctors could rinse their hands in the solution both before and after each operation. The instruments were kept in a 2% creolin solution when not in use.

An incision approximately four inches long was made in the left paralumbar fossa about three inches anterior to the tuber coxae. The skin, subcutis and muscles were incised with a medium size operating scalpel. The peri-

toneum was then pricked with the scalpel and then a curved blunt bistoury was used to enlarge the incision in the pertitoneum to the desired length. The left hand was then inserted into the opening in the abdominal cavity and the right ovary was grasped between the thumb and the first finger; a heifer emasulater was introduced into the abdominal cavity with the right hand, and the organ removed and brought out of the cavity in the left hand. The left ovary was then removed in the same manner.

After one of the operators had removed the ovaries the other closed the incision. The peritoneum, muscle and skin were all closed with the same interrupted suture of braided silk. After the incision had been closed it was painted with a commercial preparation of malachite green (malgreen) and then coated with screw worm repellant (formula 62).

After the operation the animal was released and turned on a patch of rye grass pasture. The owner was advised to leave the heifers on this pasture for 10 days before turning them out on the range for the summer. Because of the labor required to restrain all the cattle again the sutures were not removed.

The results of the operation were good in all the animals.

E. R. WALKER

Pawhuska, Okla.

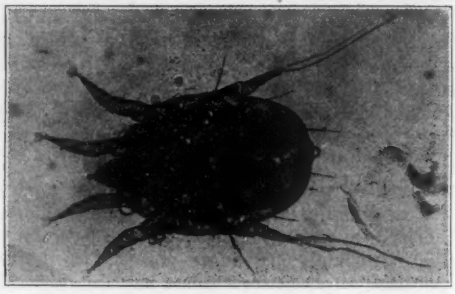
Parasitic Otorrhea

Parasitic inflammation of the ear is a common problem confronting the owners of dogs and cats, fox and ferret ranchers, rabbitries and occasionally goat raisers. It is most destructive in rabbits, least serious in goats. In the carnivores the causative agent is the common ear mite *Otodectes cynotis;* varieties canis, felis, vulpis, etc. In rabbits the condition commonly called "ear canker" may be caused by either *Psoroptes communis cuniculi* or *Chorioptes cuniculi.* In goats the agent is *Psoroptes communis caprae.*

As the external ear canal is the common site of infection, the effect on all the hosts is much the same—varying only in degree. Their presence may result in a mild to a purulent otitis, externa otorrhea and even an otitis media or fatal meningitis. The mites do not burrow in the skin but pierce the skin and suck lymph and tissue fluids. This produces an acute inflammation with exudation of serum, the formation of scabs and an abnormal secretion of cerumen. This local irritation gives rise to the early symptoms indicated by an animal's shaking of the head and scratching at the ears. All this creates openings for secondary infection, accompanied in the later stages with varying degrees of otorrhea, drooping of the ears, inclination of the head to one side, tortocolis, walking in circles and even more pronounced nervous symptoms like loss of equilibrium, epileptiform convulsions and death.

If the condition is permitted to continue its course the tympanic membrane may be penetrated either by the mites or by ulceration due to the purulent infection with subsequent infection progressively of the middle ear, inner ear and brain. General symptoms, especially in the rabbit, are unthriftiness, loss of flesh and interference with reproduction.

Symptoms are exhibited at an earlier stage by the dog than by other animals which tolerate the affection until an advanced stage is reached before marked symptoms ensue. In



Otodectes cyanotes var. Cuniculus—Wenger

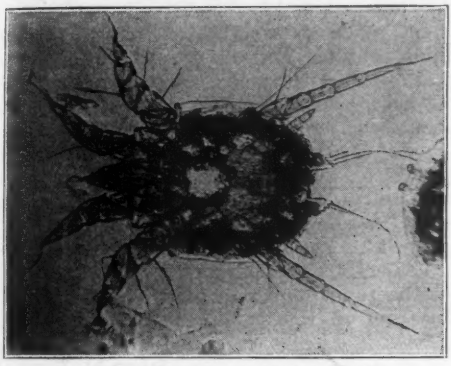
cases showing symptoms of central nerve disturbance, the ears should be checked for parasites. An inflammation of the skin and loss of hair on the back of the ear may indicate mites in the ear which the animal has attempted to scratch.

The condition is differentiated from brain tumors, encephalitis, bacterial otorrhea and other affections of the ear by finding and identifying the mite from the ear or exudate. It is barely visible to the unaided eye.

Because of its rapid spread and serious effect on the host it is imperative that the condition be diagnosed and treated promptly. As the mite remains on the surface of the skin it is fairly easy to treat successfully. Treatment consists essentially in removing the scabs and exudate from the ear and then introducing a parasiticide to destroy the remaining mites. On fox farms where the removal of live mites would facilitate the spread of infection it is advisable to inject the parasiticide into the ear previous to cleaning. This procedure also makes it easier to remove the scabs and detritus in other animals. It is important that all accumulation be removed at the first treatment. This removal is often very painful and should be accomplished with

great care and patience. A few drops of hydrogen peroxide aids in softening the mass and facilitates its removal.

Many effective remedies have been recommended for parasitic otitis. A few of the more common follow: (1) Derris powder, 8 to 10 parts per hundred in oil; (2) carbontetrachloride, 25 to 50 parts per hundred in oil; (3) equal parts balsam of Peru, alcohol, ether, and glycerine; (4) phenol, two parts per hundred in oil or glycerine; (5) mercuric nitrate and neats-foot oil; (6) naphthol, one part, ether, three parts, cottonseed oil, 10 parts and (7) iodoform, one part, either, 10 parts, and cottonseed oil, 25 parts. The initial treatment should be repeated in 10 days with another treatment. A more satisfactory method is three treatments a week apart. On the final treatment the ear canal should be free from all exudate and excess medicinal materials.



Otodectes cyanotes var. Felis—Wenger

On infected fox farms it is advisable to inject some parasiticide periodically into the ears of all the animals on the farm. An oil can with a rubber-protected spout is suitable for the purpose. The disinfection of pens and houses with a coal-tar-creosote solution will aid greatly in reducing the spread of infection.

WILLIAM R. STREETER

Winchester, Ill.

Toxemia a Result of Alveolar Periostitis

A male Maltese dog, eight years of age and weighing approximately twelve pounds was brought in for examination by the owner who had observed that the dog was listless, its appetite diminished and occurrence of vomiting when food was consumed.

Examination revealed a normal temperature, congested mucous membranes with the gums receding from the roots of the teeth and excessive tartar deposits on all the teeth. The incisor teeth were all quite loose. The first premolars were absent from both the upper and lower jaws. Of the second premolars only the upper left remained. In the location of the upper right second premolar there was a fistulous tract which led from the mouth into the nasal cavity. Pus exuded from the opening into the mouth with each expiration. There was also a discharge from the right nostril. The breath had a very offensive odor.

A diagnosis of alveolar periostitis with resulting toxemia was made. The dog was given three-fourths grain of nembutal, the tartar deposits were scrapped from the teeth, the incisor teeth and the lower right third premolar, which also was very loose, were extracted. The mouth was then swabbed with a 1% solution of sodium perborate and the tract from the mouth to the nasal cavity was flushed with sulfathiazole in mineral oil. Treatment the following two days consisted of swabbing the mouth with sodium perborate solution, flushing the tract with sulfathiazole in oil plus the administering of B and iron tablets as a tonic. The dog showed some evidence of improvement at this time.

On the fourth day the dog refused to eat, vomited clear mucous and was very listless. Examination revealed pus in the eyes. The pus was removed and a few drops of butyn-sulfate solution followed by a drop of fluorescein was placed in each eye. This made large corneal ulcers clearly visible. Hot packs were applied to the eyes then butyn and metaphen ointment was placed in each eye. As the dog appeared dehydrated 100cc of a 5% solution of dextrose in saline was administered intraperitoneally. One-half ounce of aloxide was given *per os* to form a protective coating on the intestinal mucosa. A clyster was also given. This plan of treatment was followed for three days with rapid improvement. Following the marked improvement all treatment was discontinued except daily application of hot packs, butyn-metaphen ointment to the eyes and swabbing the mouth. As pus had ceased to flow from the tract its opening into the mouth was cauter- of toxins which were absorbed more rapidly The corneal ulcers also were showing improvement at this time.

As the healing of corneal ulcers is a slow process the dog was taken home. The owner was given instructions to apply hot packs to the eyes three times daily and that butyn-metaphen ointment should be placed in them following each period of heat treatment. The dog was to be returned in 10 days.

The outcome was apparently satisfactory but it is believed that much trouble could have been avoided if not all of the affected teeth

had been extracted at one time. The extraction of the teeth was, no doubt, quite a shock and their removal probably released large amounts of toxins which were obsorbed more rapidly than if only a few teeth had been removed at a time.

GEORGE ROBERTS

Cawker City, Kan.

Canine Nephritis with Secondary Dermatitis, Hypopyon and Glaucoma

On the afternoon of April 13, 1945, a four-year-old, male, golden cocker spaniel weighing 28 pounds was presented for treatment. According to the owner, another veterinarian had been treating its dry, scaly skin condition with canex and its eyes with yellow oxide of mercury ointment the two preceding weeks.

Upon examination a general toxemia with a secondary dermatitis, hypopyon and glaucoma was noted. The temperature was 103.8° F. The mucous membranes were severely congested. Manual palpation over the loin produced severe pain. The hair coat was dull and rough with scurf over the perineal and inguinal region.

Microscopic darkfield examinations of the blood and urine were negative for Leptospira. The urine showed a high albumen content and contained many lymphocytes and epithelial cells.

The condition was diagnosed as nephritis with secondary dermatitis, hypopyon and glaucoma. Prognosis—doubtful.

Treatment was begun with a 2% sodium bicarbonate enema, an injection of 1000 units of penicillin into the vitreous humor of the left eye and 14,000 units intramuscularly. Hot packs were applied to the affected eye for 20 minutes, followed by an application of butyn and metaphen ointment. Ten cubic centimeters of canine leptospira antiserum was injected subcutaneously and ten grains of methenamine was administered *per os*, with 30 grains of sulfathiazole.

April 14. The temperature was 102° F. The (glaucoma) intra-ocular pressure was reduced and there was very little pus visible in the anterior chamber of the eye.

Ten thousand units of penicillin was injected intramuscularly. Ten grains of methenanine and 15 grains of sulfathiazole *per os* were given orally and again hot packs, twice daily, to the eye followed by butyn and metaphen ointment were applied.

April 15. The temperature was 101° F. and the therapy of the previous day was repeated.

April 16. Treatment of the two days previous was repeated except that no penicillin was administered.

April 17. Examination of the left eye showed evidence of irido-cyclitis and four drops of a 0.2% solution of arecoline hydrobromide was instilled into the conjunctival sac morning and evening instead of the butyn and metaphen ointment, and mercuric atropine ointment was applied at noon to prevent adhesions between the iris and ciliary body.

April 18. Treatment was similar to that of the previous day except 4% pilocarpine ointment replaced the 0.2% arecoline hydrobromide solution, and 10,000 units of penicillin was injected intramuscularly.

The dog was showing considerable improvement.

April 20. Therapy was similar to that of the previous day, but no penicillin was injected. The animal was bathed and exercised and all conditions appeared to be cleared up favorably.

April 21. The dog was sent home, recovered.

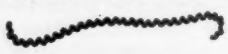
Penicillin was apparently of material benefit in the rapid reduction of the body temperature and of the suppuration in the vitreous humor.

JAMES M. BARBEE

Sutton, Nebr.

A Typical Case of Human Leptospirosis

Because of the wide-spread occurrence of canine leptospirosis in this country and the great prevalence of the disease among dogs in local outbreaks it follows that most veterinarians are more or less frequently exposed to this infection.



Leptospira

Leptospira, genus of the order of Spirochaetales of the family Spirochaetaceae, are thin spiral organisms, flagellated at the extremities, one or both of which are bent back like a hook. *L. canicola* causes an infection in dogs which is transmissible to man. *L. icterohaemorrhagiae* is responsible for Weil's disease in man

How much danger of infection this exposure may entail is not definitely known. Probably if care is observed in handling cases of leptospirosis in dogs, the veterinarian runs small chance of infection. Nevertheless, since there is undeniably some danger of acquiring this disease from caring for infected dogs a description of a case that occurred in a man during my last year in school at the Kansas State College may be of interest and of value since many physicians in this country, where the disease is relatively rare in man, are not familiar with the symptoms of leptospirosis.

Leptospirosis, or Weils disease, in man is fairly common in Europe but is not prevalent in this country. During the last few years more cases have been diagnosed than formerly and clinicians are inclining to the opinion that the incidence of this disease is greater than has been supposed and many cases may have passed unrecognized. The symptoms are quite varied and, according to Hagan, often are mistaken for those of undulant fever, influenza, epidemic meningitis or other diseases.

In Manhattan, Kansas, and in adjacent rural areas several cases of infectious jaundice occurred during the winter of 1944-45. This disease first made its appearance in December. This was followed by two cases in January and several more in succeeding months. Both youths and adults were affected, the former recovering more quickly than the latter. There were no deaths, but some of the patients were hospitalized from 20 to 30 days.

Concurrently with the human endemic, an enzootic of leptospirosis existed among the dogs in this area. The coincidence led many to believe that the dogs were the source of the human outbreak. This incrimination hardly seems tenable, since over 200 canine cases were diagnosed and treated at the veterinary clinic and there was no incidence of the disease among the veterinary students. Furthermore many of the human cases—as the patient in this report—had no close contact with dogs. The more generally accepted explanation of the occurrence of the cases in persons was that they were due to contamination of human food by infected rats.

Clinical Description

The patient was 26 years of age. The onset of the disease was gradual with lassitude, loss of appetite, nausea, fever, vomiting and icterus. During the onset a temperature of 100° F. was recorded, but it receded to normal on the third day. Vomiting began on the third day and slight icterus was noted on the fourth day. The jaundice became marked the following day. Clay-colored stools and dark-colored urine were noted on the third day.

Laboratory Findings and Diagnosis

The patient called at the doctor's office on the sixth day of illness. Although there had been only one diagnosed case of human leptospirosis at this time, Weil's disease was suspected because of the symptoms and alarming icterus. A blood specimen subjected to dark field examination revealed actively motile, spiraled, cylindrical organisms—as many as four of these could be seen moving through the field at one time. A diagnosis of leptospirosis was made. No animal inoculation was made since guinea pig inoculation with the canicola strain is often negative and in those cases in which infection occurs the icterus is usually absent or slight. Serum samples failed to agglutinate antigens of *Leptospira canicola* or *L. icterohemorrhagiae* at the initial or any subsequent tests. At no time did palpation reveal tenderness of the liver, spleen or kidney which is so common in canine leptospirosis. Dark field examination of blood was made every third day. Urine samples were examined daily. The blood was positive for Leptospira for 10 days following admission to the hospital, but the organisms did not appear in the urine until the seventh day of hospitalization (thirteenth day of illness). The urine remained positive for nine days.

Icterus Index.—7th day of illness 50, 9th day 40, 11th day 20, 15th day 12, 19th day 10 and 25th day 10.

Blood Count (8th day).—Hemoglobin 84%; leucocytes 5,400; neutrophiles 55%; lymphocytes 44%, and monocytes 1%.

Urine.—Color, straw colored; specific gravity not determined; reaction 7.0%; albumin, trace; sugar, negative.

Treatment.—Penicillin was injected intramuscularly—20,000 units every three hours for 13 days, or a total of 2,100,000 units. All other treatment was symptomatic.

The patient was hospitalized for 20 days which means he was ill 26 days. Convalescence was rapid and uneventful.

J. Ronald Pickard

Carlinville, Ill.

Practice Problems and Solutions

1. Now that the war is over, how can I increase my practice?

Ans. Make arrangements to go on a hunting, fishing or bowling trip. Every farmer in your community will take a notion to call you then.

2. Do you prefer mud tires or chains in winter?

Ans. Both. Usually in good weather with fine roads nearly all calls will be on the paved highways. Just as soon as snow or mud comes, most of calls will be on dirt roads.

3. When a call comes in at midnight, and the owner says the patient has been sick only half an hour, should I believe him?

Ans. Many clients aim to tell the truth, but some are poor shots.

4. How can I arrive at a correct estimate of my income tax?

Ans. Subtract V-J Day from the gross; add 3%, and deduct what you didn't collect. The net result, minus what you lost at poker, gives

you a 50-50 guess on the semi-annual estimate. The collector will then return it to you for correction at his leisure.

5. What is the best line of treatment for bovine mastitis?

Ans. Let the cow read a few advertisements of mastitis remedies while chewing her cud. A complete cure in every case should result in four days.

Moscow, Idaho. E. T. BAKER.

The Sense of Smell as an Aid in Diagnosis

The sense of smell has the outstanding characteristic of being the only special sense that improves with age. As everyone knows, mammals are superior to man in this sense. Carnivores* depend upon it for hunting and herbivores sense danger by it. Even fish have a well-developed sense of smell; however, it is water-borne while ours is air-borne. The shark is called "the bloodhound of the sea" because of the keenness of its detection of odors.

So far as is known birds too, particularly the vultures, may be superior to man in their ability to detect odors. For example, buzzards flying high in the sky are popularly supposed to be able to detect even the odor of approaching death in a man or animal on the ground far below them. Although man is far inferior to the lower animals in his ability to detect odors his sense of smell is keen enough to be a definite aid to the veterinarian in the diagnosis of many ailments.

The delicacy of smell is governed by: (1) the size of the olfactory lobes, (2) the complexity of the olfactory surface and (3) the habits of an animal.

The healthy skin of animals has a faint, characteristic (varying with species), but usually not unpleasant odor. The breath usually has very little, if any, odor.

In general, foul odors of the breath and skin come from many different conditions. The odors are usually characteristic, but are not always specific for any one ailment.

Mechanical and miscellaneous causes of fetid or carious breath are as follows: (1) stagnant masses of putrifying exudate in the turbinates, sinuses, guttural pouches or mucous membrane of the upper air passages and bronchi, (2) putrid tumors in the air passages, (3) decomposition of blood and nitrogenous substances, (4) necrosis of bones around air passages and tooth alveoli, (5) dental caries, (6) necrosis of the turbinate bones, (7) tartar on the teeth, (8) gastric hemorrhage, (9) gastritis and (10) foreign bodies.

Gangrenous pneumonia has an "insipid, sweetish" odor which may be pathognomonic if it occurs early. This same odor sometimes occurs in catarrhal stomatitis due to decomposing food particles and epithelial cells.

A sour smelling breath with a sticky feeling mucous membrane frequently accompanies chronic indigestion or general debility in the horse. In cattle the odor of the breath is governed to a large extent by the feed consumed.

Characteristic bacterial odors include: (1) tissues invaded by *Clostridium chauvoei* (blackleg) give off a characteristic odor of rancid butter. This is almost always present and aids in post-mortem diagnosis, (2) infectious roup in chickens has a sour odor and it can be easily differentiated from uncomplicated avitaminosis A—the latter having no odor, (3) sheep, when infected with variola diphtheritica, give off a carrion-like odor in their breath.

Characteristic virus odors include: (1) a very fetid breath of cats with infectious enteritis which aids materially in diagnosis of this disease.

Odors characteristic of certain parasitisms include: (1) an unmistakable ether-chloroform odor on the breath of calves and dogs affected with ascarids, (2) "characteristic disagreeable odor" of the skin and almost a constant concomitant of demodectic mange in animals, (3) a characteristic sweetish odor which is very easily recognized after a little experience is said to be given off by dogs heavily infected with tapeworms.

Odors attendant upon poisonings include: (1) an acetone odor on the breath in ketosis, starvation, diabetes and trembles (from eating wild snake root or rayless golden rod), (2) the odor of paraldehyde on the breath in paraldehyde poisoning, (3) a garlic odor in cases of arsenic poisoning, (4) an arsene when the trouble is due to that gas, (5) a "peach-pit" odor on the breath usually indicates cyanide poisoning, (6) phenol odor on the breath and over the body in phenol poisoning, the same goes for sulfide poisoning and (7) the odor of urine on the breath and all the tissues of the body in uremic poisoning.

Smell is by no means a thorough and definite means of diagnosing disease, but it has its place in the examination of a great many conditions.

L. D. JERNIGAN

Osage City, Kansas

*According to Gaines Dog Research Center, the olfactory mucous membrane of man is only as large as a postage stamp; that of the dog exceeds in area one-half of the surface of the body of the dog. A dog can detect the odor of formic acid in a dilution on one to 10 million.

★ ★ ★ BUY VICTORY BONDS ★ ★ ★
AND HOLD THEM

Report on "X" Disease

July 29 I was called to the E. C. ranch northeast of Shelby, to see a cow and calf suspected of being poisoned.

It was late in the evening and complete examination was not practical. The history showed that both affected animals were in a herd of 50 ranch animals, all grazing on the same area and drinking water from the same source. None of the other animals showed the slightest degree of debility. Later examination of the range failed to disclose any poisonous plants, alkali reservior or other possible source of poisoning.

The calf was blind in both eyes, was down and could not stand, had a slow pulse, subnormal temperature and dyspnea. Examination failed to reveal anything further than paleness of the mucous membranes of the mouth and extreme salivation.

Calcium dextrose was administered to the calf but it died within 12 hours. The cow showed faint striations on the anterior dorsal part of the tongue, extreme salivation, dry coat and bilateral blindness—the corneas being of a milky blue.

Treatment of the cow was instituted using dextro-calcinate (Fort Dodge No. 2), sodium thiosulphate-sodium nitrate solution intravenously and sterile milk intramuscularly. Slow recovery followed.

A second call was made July 31 and another injection of dextrose calcinate was given.

In my opinion this cow and calf had an acute attack of the so-called "X" disease. It also seems to indicate that calves are more susceptible than older cattle.

A. W. ELTING, D. V. M.

Shelby, Montana.

Oophorectomy in a Nymphomaniac Mare

October 4, 1944, an 11-year-old, 1,000-pound, five-gaited saddle mare was presented for examination with the following history. She had never conceived but appeared to be in estrum constantly. The preceding June the mare's left ovary had been tapped by a veterinarian and a red tinged fluid obtained. Following the tapping she became a nymphomaniac and this was her present condition.

Examination showed the left ovary to be greatly enlarged and very soft. The owner was advised as to the findings. The owner wanted a colt from the mare so it was decided to remove the affected ovary. The ovary (left) was removed by the method described in "Veterinary Surgery Notes," by Dr. E. R. Frank. The mare made an uneventful recovery and was discharged 10 days later.

Laboratory examination showed the ovary to have many cysts throughout its substance. It weighed 237 grams and was 6½ x 7½ x 8½ inches in diameter or approximately six times normal size.

November 14, 1944, the mare had a normal estrum and was bred to a five-gaited saddle stallion. She apparently conceived for no other estral periods were noticed.

March 8, 1945, a urine sample from this mare was given a Cuboni test. A slightly positive reaction for pregnancy resulted. The time was close to the end of the period that the Cuboni test may be made (45-102 days) and this may have accounted for the only slightly positive reaction.

The removal of the left ovary apparently enabled the right overy to function normally.

DAVID L. SMITH

Elkton, Ky.

Penicillin and Antitoxin in Equine Tetanus

Having read reports of the use of penicillin and antitoxin in the treatment of tetanus of persons, it was decided to try this line of treatment in the first case of equine tetanus encountered. An opportunity soon presented itself. The subject was a six-year old, heavy type gelding. The owner swore it was the best animal he ever owned and would "shoot the works," if the animal could be saved. Naturally, it was pointed out that often such cases were refractory even to the most expensive lines of treatment. Due to the relatively long period of incubation and the fact that the horse had only slight trismus, I offered a hopeful prognosis.

Aside from the trismus, the animal showed an elevated tail, stiff gait and saw-horse appearance. The nictitating membrane was reluctant to respond to a clap of the hands. The temperature was normal. A healed wound on the right pastern offered *prima facie* evidence as to the site of the infection. The treatment was as follows:

1. Complete isolation in a dark, quiet stall which the farmer soon improvised in an old drive shed.

2. As the animal could still eat—although with difficulty—it was not necessary to resort to stomach tube, nutrient clyster or dextrose intravenously.

3. Sixty thousand units of tetanus antitoxin were given the first day; 40,000 units intravenously and 20,000 units subcutaneously. Forty thousand units were given subcutaneously the second day.

4. An initial dose of 100,000 units of penicil-

lin was given subcutaneously with four additional injections of 50,000 units each at six-hour intervals.

The gelding was materially improved on the second day of treatment, eating more and showing less excitability about the head. On the third day after initiating treatment, the only change was an increase in appetite. Ten days later the owner phoned to say that the horse was apparently normal again, with the exception of a slight swelling of the sheath due to standing in.

DONALD F. DAMUDE

Sussex, N. B., Canada.

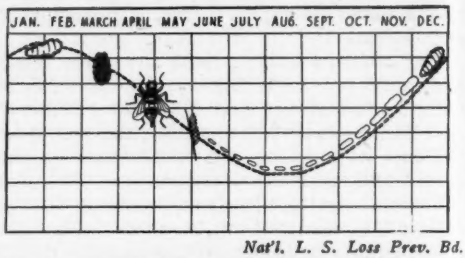
Hypersensitiveness of Cattle to the Ox Warble

In veterinary medicine as in human medicine, hypersensitiveness (allergy-anaphylaxis) is being recognized oftener and studied more than formerly. One of the early discussions of anaphylaxis in cattle and sheep due to the larvae of *Hypoderma bovis* and *H. lineatum* and *Oestrus ovis*. was published by Hadwen and Bruce[1] in 1917. Very little has been written on this subject since and therefore some veterinarians may be unfamiliar with this subject; sometimes called grub poisoning.

Last spring I was called to see three cows (at different times and on different farms) that showed the following symptoms: restlessness, fast labored breathing; characteristic edematous swelling of the muzzle, eyelids, anus and vulva. The temperature was normal. There was a watery discharge from the eyes. The skin was wrinkled on the udder or neck or both. Milk production was completely suppressed.

Not thoroughly understanding the condition, but suspecting plant poisoning of some kind, my treatment of the first case included a detoxifier and purgative. In six hours the cow was normal. However, by that time I had reviewed Udall[2] and found all the above symptoms given under urticaria, and that ailment runs a short course without leaving any severe after effects. One point in Udall remained in my mind, however, and that was the mention that Hadwen and Bruce listed the same symptoms in describing anaphylaxis due to the warble fly larvae. I remembered that the cow in my case had many warble larvae on her back and the owner said he had brushed her back a few hours before he noticed that she was sick. Considering all the facts, I concluded that the case I had seen was not plain urticaria but an anaphylactic reaction to warble larvae some of which probably had been crushed when the owner brushed the cow's back.

I reviewed the paper of Hadwen and Bruce and found that they made a suspension of ground larvae and then injected the suspension intravenously into the cow from which the larvae were taken. In three cases death occured in less than five minutes. The symptoms preceding death were labored breathing, and swelling of the muzzle, eyelids, arms and vulva. Other experiments were not fatal but they produced symptoms similar to those I had encountered in my first case. These experimental animals became normal in 6 to 12



Nat'l. L. S. Loss Prev. Bd.

The life cycle of the ox warble grub in latitude of central and southern Illinois

hours without treatment. Heyden and Bruce also cited two naturally occuring cases that showed the same symptoms and course as the non-fatal, experimental cases.

When I was called to see my second and third cases I recognized the condition immediately by the characteristic swellings and by finding warble fly larvae on the backs of the animals. I gave a favorable prognosis in both cases and treated each with one pound of epsom salts in a quantity of water. Recovery was complete in six hours in both cases.

One significant fact remains and that is that Hadwen and Bruce found upon injecting the larvae suspension that some deaths occurred in less than five minute. This may possibly account for some of the undiagnosed or wrongly diagnosed cases of sudden death in cows during the spring months.

In any event, I believe that most cases of urticaria are the result of hypersensitiveness to the warble fly larvae. Being able to explain the cause and (if the animal is alive when one arrives) that she will probably recover fully in 6 to 12 hours impresses the owner favorably. At least, it did on my second and third cases.

References

2. Udall, D. H., The Practice of Veterinary Medicine, 4th revised edition, 299-300, 324, 1943.

1. Hadwen, S., and Bruce, E. A., Anaphylaxis in cattle and sheep, produced by the larvae of *Hypoderma bovis, H. lineatum, and Oestrus ovis J.A.V.M.A.*, 15, p. 15, 1917.

HARVEY G. TABLEMAN

Warren, Ill.

Abstracts

Oral Administraiton of Penicillin

By the use[110] of a double gelatin capsule hardened by formaldehyde-alcohol immersion together with preliminary neutralization of the hydrochloric acid of the stomach, adequate blood concentrations of penicillin can be obtained. The process of hardening is accomplished by transferring the contents of an ampule (100,000 units) of powdered sodium penicillin to a plain gelatin capsule (No. 1) which is moistened and sealed and then placed in a next larger capsule. This is then hardened by placing in a solution (1:20) of formaldehyde for five seconds and then immersed in 95% alcohol for five minutes. Aluminum hydroxide tablets are given one-half hour prior to administration of the capsules.

Streptothricin and Penicillin Compared

Streptothricin, the discovery of which was reported in 1941,[1] has exhibited properties which show it be a definite advance in the field of microbiotic agents and which indicate it may play as prominent a role in chemotherapeutic practice as penicillin. Streptothricin is a substance from soil bacteria of the *Actinomyces* group. Although tyrothricin and penicillin are inhibitory principally for gram-positive bacteria, streptothricin is active against a variety of bacteria, regardless of their gram-negative gram-positive reactions. *Escherichia coli*, a gram-negative organism which has been resistant to many antibiotic substances is susceptible to streptothricin but resistant to penicillin since 3,000 times the amount of penicillin required to inhibit *staphlococus aureus* has no effect on *Esch. coli*. Streptococci are more resistant to streptothricin than are staphylococci which is in contrast to their reaction to penicillin. However, penatin, produced from *Penicillium notatum* (also called penicillin B or *Esch. coli* factor) possesses antibacterial action against gram-negative as well as gram-positive organisms.

Since penicillin and streptothricin differ so widely in bacterial specificity various investigators[2] have combined the two and have found that the combined action is almost quantitively the sum of inhibitions of both acting singly—according to calculations, but in actual experiments the activity was greater than either alone but not the equal of the activities of the sum of the two when each was used alone.

If early reports of the value of streptothricin are borne out, it bids fair to equal, or surpass, penicillin in large scale production.

Penicillin Successful in Mastitis

Three experiments in the treatment of mastitis by udder infusion with penicillin sodium were undertaken at New Jersey Agricultural Experiment Station:[105] (1) Infusion of 5,000 to 200,000 units (per quarter) in a single dose, (2) infusion of 10,000 units (per quarter) at five consecutive milking periods and (3) infusion of 20,000 units (per quarter) at five consecutive milking periods. In all cases the disease was due to *Streptococcus agalactiae* infection.

The best results were attained in the third experiment, in which 32 infected quarters of 13 cows were given five infusions at milking intervals of 20,000 units of penicillin sodium, dissolved, immediately before use, in 50cc of boiled, distilled water.

Fifteen of these quarters had been infected more than six months; 17 less than six months. Five quarters were markedly indurated; 21 distinctly indurated and the remaining six were slightly indurated. The secretion was markedly abnormal in seven quarters; moderately abnormal in 16 quarters and macroscopically normal in nine quarters. All cows were in lactation at the time of treatment, but two were dried off preparatory to calving, during the five-week observation period following treatment.

All quarters were freed of infection as a result of the five injections. Improvement in the appearance of the milk was immediate. The quarters remained normal during the observation period of five weeks (extended to three weekly examinations after calving in the case of two cows.)

The treatment caused no swelling or other evidence of acute inflammation in the quarters infused. Only slight and transient change in the macroscopic appearance of the milk was caused by the injections and there was no adverse effect on milk production.

The author observes:

"It is indeed remarkable that quarters, the secretion of which had been of the nature of serum and sediment for weeks, or even months,

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[110] Ross, Sidney et al. Penicillin by mouth. *J. Am. Med. Assn.*, 3:129, pp. 327-332.

[1] Waksman, S. A., and Woodruff, H. B. *Proc. Soc. Expt. Biol. Med.*, 49:207. 1942.

[2] Foster, J. W., and Wilker, B. L. *J. Bact.*, 46:187. 1943.

[105] Murphy, James M., and Pfau, K. O. The value of local injections of penicillin sodium in the treatment of Streptococcus agalactiae infection and mastitis in cows. *Cor. Vet.* 35:2, pp. 88-103. 1945.

before treatment, should, within several days of the last of the five treatments, begin to resemble milk. The rapidity with which this takes place is partly the result of the low toxicity of the treatment for the mammary gland, but it must also indicate that the degree and duration of macroscopic alteration of the secretion prior to treatment, are not necessarily indicative of the degree of permanent damage sustained by the gland."

Vaccine for Foot-and-Mouth Disease

A vaccine, prepared from virulent blood, taken from animals in the primary febrile stage of foot-and-mouth disease, defibrinated, and treated with crystal violet, gave satisfactory results in the protection of cattle against the disease.[89] The authors suggest that this vaccine provides a practical emergency measure in infected areas, since it may be prepared locally in an outbreak, there being therefore no need to determine the type of virus causing the outbreak.—I. W. B. in *Vet. Bul.*

Intraperitoneal Insemination of Poultry

Sufficient information is already available that, under optimum conditions, good fertility may be obtained from artificial insemination of the domestic fowl by placing the semen in the cloaco, vagina or uterus. The author[99] describes his technic for injecting it intraperitoneally.

Fowl semen was obtained by "milking" the bulbous ducts in the cock after stimulating ejaculation by manual manipulation. It is advantageous to confine the cocks in cages for 12 hours and not feed, handle or in any way excite them during this period and up to the moment of collection. The semen is caught in a short wide test tube and contamination avoided as much as possible.

The daily production of semen per bird usually runs from 0.5 to 1cc. The density varies from 200 thousand to 10 million spermatozoa per cubic millimeter, the average being 3,200,000.

A glass syringe is used to deposit the semen in the abdominal cavity of the hen, in the region of the ovary. Of 75 inseminations with a single dose, 64 were successful. The semen may be used as collected or diluted; 0.5cc of either being sufficient.

[89] Viera, O., and Castelo, M. Protocolo do ensayos preliminares de immunizacion antiaftosa, con vacuna al cristal violeta. [Preliminary trials with foot and mouth disease crystal violet vaccine.] *Rev. Med. Vet., B. Aires,* 26, pp. 114-118. 1944.

[99] Drimmelen, G. C. Van. Intraperitoneal insemination of birds. *J. South Afric. Vet. Med. Assn.,* 16:1. 1945.

Epizootiological Survey of Equine Encephalomyelitis

In an outbreak of equine encephalomyelitis, western type, in eastern Nebraska in the late summer and fall of 1943, the authors[104] collected 10,886 mosquitoes and 1480 bedbugs and tested them for the virus. One strain of western type virus was isolated from a pool of 67 *Culex tarsalis* of a total of 631 mosquitoes of this species tested. No virus was isolated from 9000 *Aedes vexans* nor from any other species of arthropod.

Sera, collected from 91 mammals and birds, were given neutralization tests against western type encephalomyelitis and St. Louis encephalitis viruses with negative results. No vertebrate reservoir was discovered.

Previous work in hot irrigated valleys of western states has incriminated the mosquito as a vector for horse and man and the fowl as a natural reservoir of the virus.

The authors concluded that further investigation of the epizootiology of this disease in the Middle West is indicated.

Tenotomy in the Fox

Probably the most effective means of preventing ranch foxes from attempting to tunnel out of their pens and to stop them from scratching and tearing the wire fences is to sever the digital flexor tendons in the front feet. It also prevents many injuries to the animals including fractures of the legs and backs that result from climbing the wire and falling, particularly when frightened.

Gunn[98] describes a somewhat different technic from that commonly used as follows:

The time required to sever the flexor tendons of both front feet of the fox is not more than five minutes. The animal is turned on its back while the operator pulls the paw out toward him. This causes the fox to flex its toes. The operator then takes hold of one claw and exerts a downward pressure. The point of a scalpel is placed over the tendon and the incision made. The tendon snaps when it is cut and the toe relaxes. Each toe is operated upon in a similar manner. The incision, about one-fourth of an inch long is made just behind the toe pad and anterior to the foot pad.

Hemorrhage from the incision is slight and painting the field with iodine affords sufficient protection against infection. No after treatment is needed.

[104] Hammon, W. McD., Reeves, W. C., and Galindo, P. Epizoology of western type equine encephalomyelitis; eastern Nebraska field survey of 1943 with isolation of the virus from mosquitoes. *Am. J. Vet. Res.,* 6:20, pp. 145-148. 1945.

[98] Gunn, C. K. How to cut fox tendons. *Am. Nat'l Fur & Market J.,* 24:1. 1945.

Acariasis in Mink

Destruction of the guard hairs on the sides and tail of minks was excessive in several minkeries in Oregon.[109] Dietary changes did not improve the situation. An examination of the bedding (rice hulls) revealed mites (Tyroglyphid and Cheyletid spp.) commonly found in cereals. A search for the mites in skin scrapings was unsuccessful but a serous exudate comparable to that occurring in psoroptic mange at the sites of injured fur was present. The authors believe that the mites attacked the animals and the pruritus they caused and consequent rubbing and scratching was responsible for the damaged fur.

Corn Fungus Poisoning

Symptoms not unlike those of hypocalcemia were observed in cattle.[106] Some of the animals were affected with giddiness, convulsions, and blindness, while others were lethargic or comatose. Muco-hemorrhagic diarrhea was a symptom in some cases. On P.M. examination, the outstanding feature was the presence of submucous hemorrhages in the stomach and small intestine.

The symptoms and lesions were attributed to poisoning by *Ustilago maidis*, which was found parasitizing the maize present in the animals' food. Treatment consisted of change of diet, subcutaneous injection of pilocarpine in badly affected cases, and the administration of magnesium sulphate in the less severe cases.—I. W. B. in *Vet. Bul.*

Bovine Infectious Keratitis

Hemophilus bovis was identified[108] in 93 (83%), of 112 infected eyes examined. It was not found in either eye of 20 normal cattle.

Inoculations of *H. bovis* into the conjunctival sac of 15 calves resulted in the development of symptoms and lesions indistinguishable from infectious keratitis in 12 of the animals. Unilateral inoculations sometimes resulted in bilateral infections. About 50% of the animals in a herd are usually affected regardless of the treatment or control measures instituted. The incidence is highest among the younger members of the herd.

H. bovis persisted in the eyes of the inoculated calves for two to five months after the injections were made and the eyes had apparently recovered from the induced infections.

Sheep, guinea pigs, mice and rabbits were not susceptible to inoculations of *H. bovis*.

The disease occurs in every part of the country but is more prevalent in the plains and western states than elsewhere. Outbreaks of keratitis are usually a result of adding new animals to the herd. The disease once introduced into a herd tends to recur annually during the summer or early autumn.

Vesicular Stomatitis in Swine

An outbreak[105] of vesicular stomatitis that occurred in 1943 in hog-cholera immune and hyperimmune hogs used in the preparation of hog cholera antiserum in a commercial biological establishment at Kansas City, Kans., is reported in U. S. Department of Agriculture Circular No. 734 (July 1945). This outbreak is the first in which the disease has been reported as occurring naturally in swine.

In this outbreak, 417 of 787 large hogs developed the disease, whereas only one of approximately 500 virus, test and stocker pigs became infected. Twelve yearling calves, exposed by direct and indirect contact to the swine, were refractory to the disease.

In tests made for the purpose of diagnosis, cattle, horses, hogs, and guinea pigs were found to be susceptible to epithelial inoculation, whereas goats were refractory. These findings, as well as results of tests involving intramuscular, subcutaneous and intravenous inoculations, showed definitely that the disease was vesicular stomatitis. Other tests showed that the virus causing the outbreak was a filter-passing organism, thereby agreeing with the two known types that produce the disease. The type of virus in this outbreak was proved to be identical with the New Jersey type.

Tests in swine of hog-cholera virus and hog cholera antiserum prepared prior to the diagnosis of the disease were negative for the presence of the virus of vesicular stomatitis.

No definite source of the virus causing the outbreak was found. Investigation showed no infection (1) on the farms from which any of the hogs used at the establishment were obtained, (2) among the contact calves, or (3) in the feed or water given to the animals. It was concluded, however, that there was a slight possibility that one of the virus pigs had an inapparent vesicular stomatitis blood infection at the time it was used for virus production.

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[106] Bushnell, Frances R., and Hummon, O. J. Acariasis in Mink. *Am. Fur Breeder*, (August), 1945.

[106] Nisnovich, L. Interesante caso de intoxicacion en bovinos por maiz parasitado con hongos. [Poisoning of cattle by fungus-infected maize.] *Rev. Med. Vet., B. Aires.* 26, pp. 156-160. 1944.

[108] Baldwin, Jr., A. M. A study of bovine infectious keratitis. *Am. J. Vet. Res.*, 6:20, pp. 180-187. 1945.

[105] Schoening, H. W., and Crawford, A. B. Outbreak of vesicular stomatitis in swine and its differential diagnosis from vesicular exanthema and foot-and-mouth disease. Cir No. 734, U. S. Dept. Agt., Washington, D. C.

Book Reviews

Disinfection and Sterilization. By *Ernest C. McCulloch,* M. A., D.V.M., Ph.D., Professor of Bacteriology in the Health Research Institute; Professor of Bacteriology and Parasitology of the State College of Washington; Research Veterinarian in the Agricultural Experiment Station of The State College of Washington; formerly Supervisor, Division of Health, City of St. Louis; Bilological Research, Pennsylvania Salt Manufacturing Company. Second edition, 472 pages, 68 illustrations. Published by Lea & Febiger, Phladelphia, 1945. Price $6.50.

As developed by the author, the subject of disinfection and sterilization is an exceedingly broad one, entering all measures for the prevention and control of disease and playing a part in the treatment of disease and recovery of the patient. It is an important factor in the production and processing of food and beverages and a critical one in their preservation. Nor is the disinfection of swimming pools and the treatment of sewage overlooked.

The details over the whole of these broad fields are not overlooked. Thus, for example, among natural agencies which control microbial populations are sunlight, dilution, natural filtration, sedimentation, time, evaporation and condensation, bacteriophage, antibiosis and antagonistic principles. Under germicidal properties of the body, its fluid and secretions, blood, connective tissue barrier, amniotic fluid, lysozyme, saliva, gastric fluid, pancreatic fluid, self disinfecting power of the skin, lethal radiation from the body and milk are discussed. Under surgical sterilization by heat, 36 subjects are discussed including the thermal resistance of certain pathogenic organisms, directions for operating a steam sterilizer, factors contributing to failures in sterilization, etc.

The subject of heat as a bactericide includes an unusually comprehensive discussion of milk pasteurization and the pasteurizers. In addition cooking, canning, home and commercial; sanitizing by various methods and dishwashing come in for consideration. The author finds little to approve and much, very much to condemn in the dishwashing at public eating houses and in taverns, while at soft drink fountains he finds nothing that can properly be called dishwashing.

The list of disinfectants discussed is a long one, comprising acids, alkalis, metals and their salts, dyes (including the sulfa drugs), phenols and alcohols, halogens and miscellaneous disinfectants including cationic and anionic detergents, soaps, tooth powders, aromatic oils, spices and gums, sulfur, oxidizing agents, etc.

In a work on a field so wide as this one, the space available for a review is quite inadequate to describe its contents. The work is useful to the physician, the veterinarian, the bacteriologist, the sanitary engineer and to those engaged in food inspection and other public health activities. The author has taken the time and pains to digest and present the most important of the hundreds of articles on the subject that have appeared in scientific literature. A facile writer, he presents these subjects in an interesting, pleasing and easily understood manner.

There is much to commend and little to criticise in this work. Of the latter it may be mentioned that the author seems to exaggerate the heat resisting capacity of some pathogenic spores and undervalues the effect of cold and time in destroying bacteria. Thus it is believed by many in the industry, that the organisms in highly contaminated milk powder are reduced in number about 90% by refrigeration (—20° F. for 20 days); that the bacterial count of powdered eggs, likewise, decreases in similar amount in an even shorter period, and that evaporated milk also contains many fewer organisms 10 days after it is canned than when it is placed in storage. If these popular beliefs are not based upon facts the author would have done well to supply support for his differing views.

* * * *

The Dairy Goat. New York Extension Bul. No. 414, Ithaca.

Vesicular Stomatitis in Swine. Cir. No. 734, U. S. Dept. Agr., Washington, D. C.

Winter Rations for Steer Calves. Article 28-6, Michigan Agr. Exp. Sta., East Lansing.

Immunity to Gastrointestinal Parasites. Reprint. Philip A. Hawkins, Michigan Agr. Exp. Sta., East Lansing.

Investigations of Keratoconjunctivitis in Cattle.—Technical Contribution No. 898. Texas Agr. Exp. Sta. No. 3, Angelton.

Fourteen Steps to Good Milk. This discussion deals mainly with sanitation in the dairy barn and milk house. 16 pages. Cir. 354. Univ. of Wisconsin, Madison.

More Profit from Pigs. This bulletin deals with breeding, feeding, housing, disease prevention and swine management. 48 pages. Cir. 355, Univ. of Wisconsin, Madison.

From War to Peace. Questions and Answers concerning demobilization of the armed forces and reconversion of industry. Office of War Mobilization and Reconversion, Washington, D. C.

Your Doctor Speaks. A collection of nine famous paintings reproduced in full color on art paper. Spiral binding, board covers, 11 x 14 inches. Each page contains a message on preventive medicine, signed "Your Doctor." The subjects are purely medical, but it is an attractive article for a veterinarian's waiting room table. The Upjohn Company, Kalamazoo, Mich.

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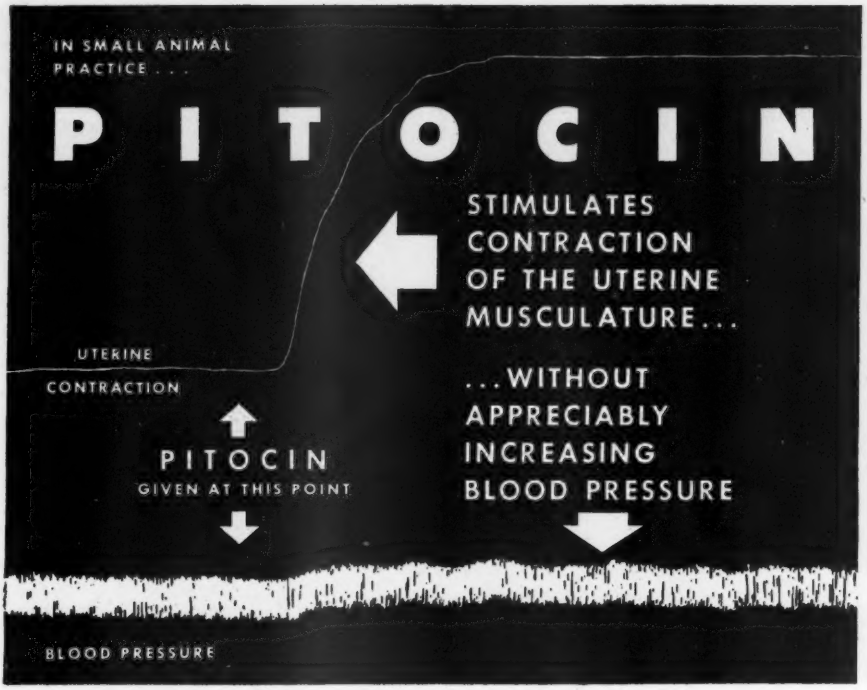
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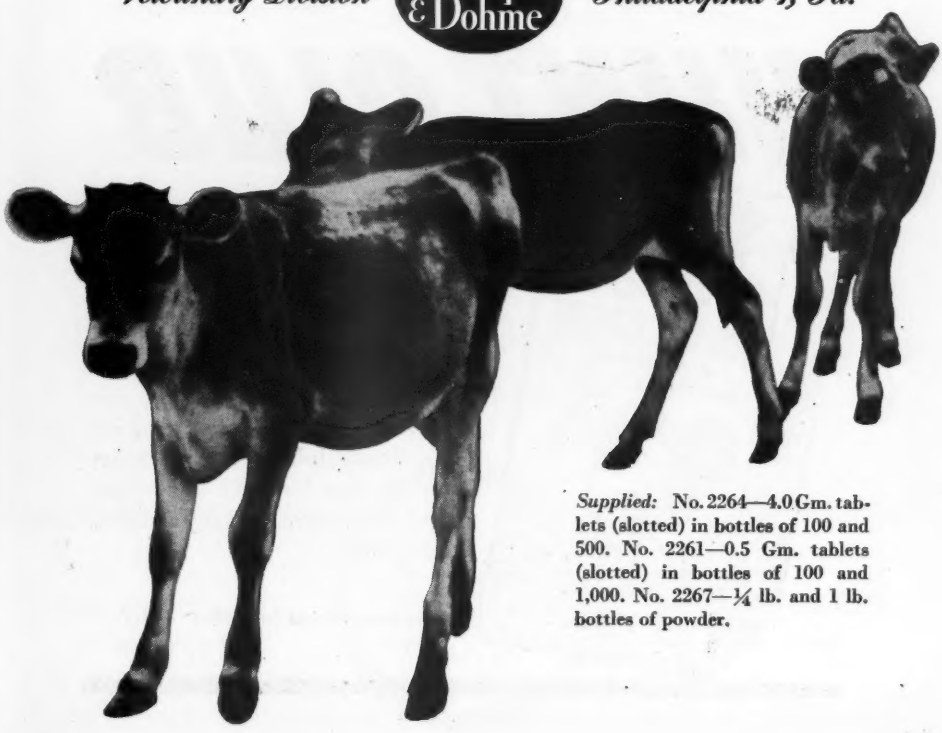
1. Thorp, W. T. S., Pisciotta, V. J., and Grundy, C. B.: J. Am. Vet. M. A. *104*:274, May 1944.
2. Graham, R., et. al.: J. Am. Vet. M. A. *106*:7, Jan. 1945.

Veterinary Division Sharp & Dohme *Philadelphia 1, Pa.*



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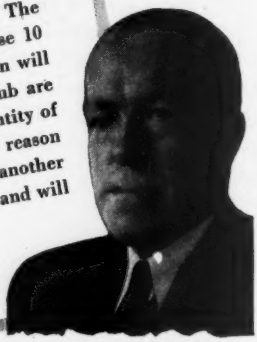

L. N. Gilmore, Ph. D.
Director of Maritime Research

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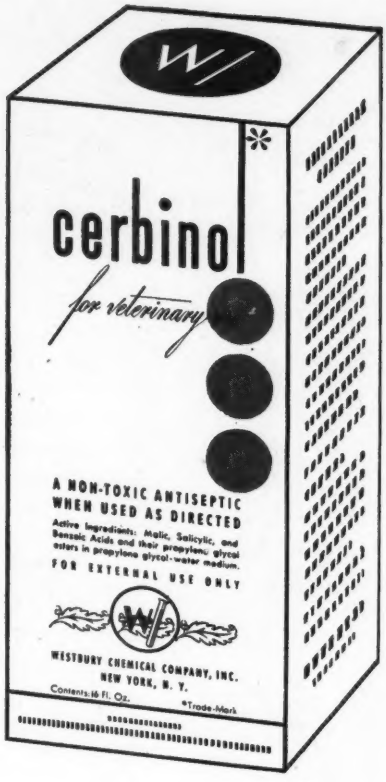
Otitis Externa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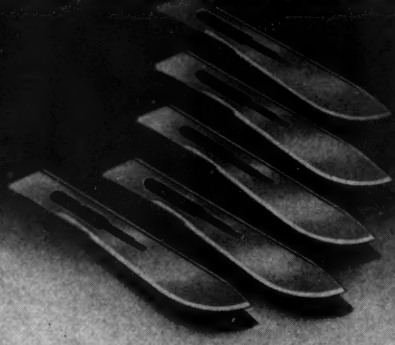

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In 1927, Gaines was milling feed for cattle and poultry up in Sherburne, New York. For a hobby, he raised dogs and in the raising discovered that good feeding was just as important as good breeding.

Dissatisfied with dog foods then available, Gaines began to experiment . . . first, in his kitchen . . . next, at the mill . . . later, in collaboration with the laboratories of leading universities. Persisting, Gaines developed a balanced diet that proved itself in grueling field trials and the most competitive dog shows . . . and revolutionized dog feeding.

Soon, dog breeders and veterinarians came to Gaines for information about his food. Later, the samples he gave away created such a demand that he made the dog food his business.

Within 16 years, Gaines Dog Meal grew to become America's largest-selling dog food, creating jobs where no jobs existed before . . . jobs for more Gaines employees; work for more farmers, more stock men; work for wholesale and retail grocers. These jobs provided pay and purchasing power, contributed to a prosperity that gave America the highest standard of living in the world.

Today, everyone agrees that America faces a serious problem in postwar employment. There must be steady jobs by the millions.

Most people want these jobs made the way Gaines did it—in the typical American way. Through expansion of existing businesses, through new business enterprises, large or small. Through initiative and ingenuity in making new products, through better products like Gaines Dog Meal, or by giving some better service.

There is no equivalent for this American way of making jobs. It has made this the most prosperous of all nations. And—as the war has proved—it has made America the most powerfully productive country on earth.

The freedom of opportunity that made this possible—the freedom to start a business, expand a business or hang out your own shingle—is not a freedom to be taken lightly, or for granted. Americans want it, Americans *need* it, for making jobs and building prosperity in peacetime.

Hence, it is a freedom to be fostered and advanced by all Americans, including yourself.

For you are a part of the public. Your opinion is part of public opinion. And public opinion is what shapes a country's destiny . . . sets the pattern of its people's lives . . . determines what freedom of opportunity they may enjoy.

You owe it to yourself to be aware of this at all times. To let *your* voice be heard and *your* opinion be known on how you want *your* job to be made in *your* country.

GAINES DOG MEAL **IS A PRODUCT OF GENERAL FOODS—AND AMERICAN ENTERPRISE**

No. 9 of a Series of Messages on Important Nutrition Subjects

Mineral Deficiency Factors In Range Feeding

IN THEIR concern over pathological diseases in their herds, many livestock men tend to overlook the fact that deficiency diseases are frequently the cause of serious herd damage and great financial loss, even though they may not often result in death of the animals. This situation presents a great opportunity to the veterinarian who can guide the stockman's thinking . . . or, in short, educate him.

Much of the knowledge about minerals and their deficiency is definite . . . these points, for instance:

1. Salt is the one universal need, as it is lacking in all range feeds.
2. Minerals must be a part of the ration, because animals can't synthesize minerals as they do some of their other nutritional essentials.
3. The functions of minerals as recognized at present are: Phosphorus and calcium to make bones, teeth and body fluids for respiration; iodine, to regulate metabolism; iron, copper and cobalt for prevention of anemia; manganese, for normal skeletal development.
4. While range grass originally provided an adequate balance of essential minerals, most of them have been critically depleted by cropping, leaching, erosion, etc.

Calcium is the one mineral that is still usually normal in forage. On the other hand, phosphorus is found in various places in insufficient amounts for satisfactory growth and reproduction. The ratio of calcium to phosphorus should be 2 to 1 instead of 12 to 1 or even 20 to 1, as is found under some conditions. The "trace" elements — iodine, iron, cobalt, copper and manganese — are lacking in varying degrees throughout the range grazing country.

Exact determination of the degrees of deficiency of the various minerals in any locality is, of course, quite difficult. A desirable solution is a supplemental feeding program that provides all of the mineral essentials and nutrients in a quantity and balance that will make up for any deficiency in the native crops.

That is the aim of the Purina program for range-fed livestock. This program is based on research and field work on the part of both Purina and Agricultural Experiment Stations, whose authoritative findings are of real value to veterinarians serving livestock growers.

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This scientific study has appreciably enriched this laboratory's already vast store of knowledge pertinent to dog feeding and nutrition. And, too, it has proved beyond a doubt the nutritional excellence of Pard. *In generation after generation of Pard-fed dogs (9 on canned Pard, 3 on Pard Dehydrated) not one has ever experienced a dietary illness.* A fine laboratory staffed with able scientists, in addition to generation feeding tests and a reputable maker stand behind this product.

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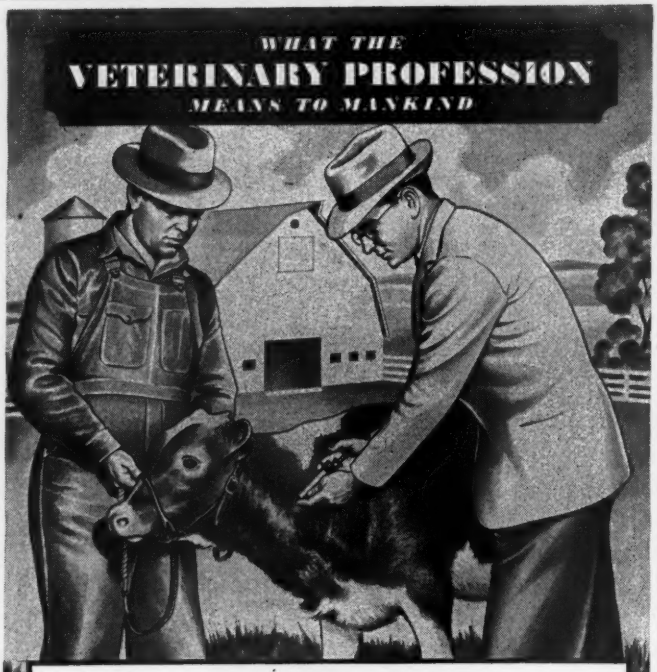

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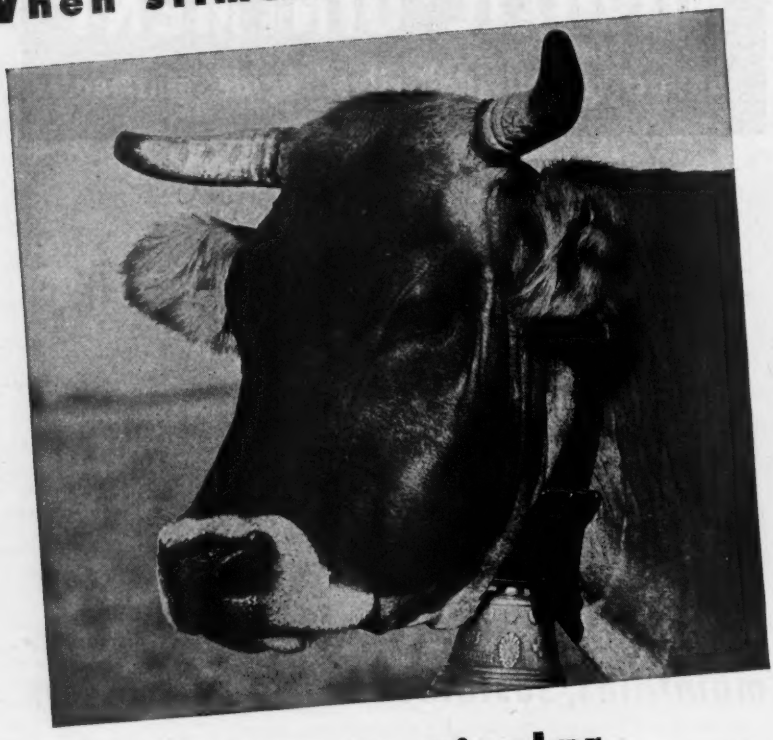

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Irrespective of animal species, Gonadogen's* stimulating action in virtually all phases of ovarian and testicular activity makes it widely applicable whenever such therapy is indicated.

Gonadogen is a stabilized form of the gonadotropic hormone obtained from pregnant mare's serum.

Available in three strengths: 10 Cartland-Nelson units per vial in boxes of six and twenty-five vials. 20 Cartland-Nelson units per vial in boxes of three and twenty-five vials. 50 Cartland-Nelson units per vial in boxes of three and twenty-five vials.

Upjohn
KALAMAZOO 99, MICHIGAN

*Trademark, Reg. U. S. Pat. Off.

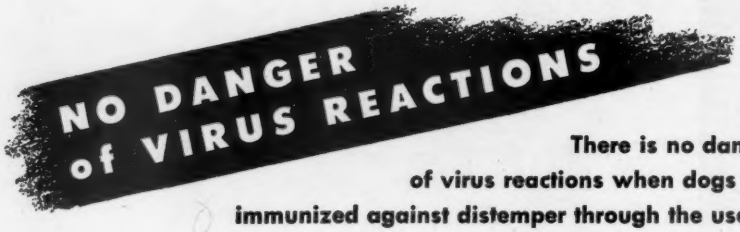
Protect growing puppies from mineral and vitamin deficiencies with

GOSHEN
MINERAL YEAST
(CANINE)

An effective dietary supplement for animals of all ages; particularly pregnant and lactating bitches. Contains selected, essential minerals, and vitamin B-Complex. Acceptable to adults and to puppies with their first solid food.

Available: 6 oz. cans, per dozen, $2.50; 1 lb. cans, per dozen $5.00; 10 lb. bag, each, $4.00; 100 lb. bag, $27.50. Send orders direct to the laboratories.

GOSHEN LABORATORIES, INC.
GOSHEN • NEW YORK



There is no danger of virus reactions when dogs are immunized against distemper through the use of

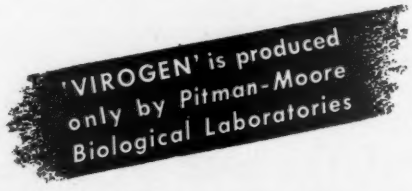
'VIROGEN'*

CAREFULLY CONTROLLED research by scientists of the Pitman-Moore Research Laboratories has demonstrated (*The Allied Veterinarian,* Sept.-Oct., 1940) that three injections of 'Virogen,'* *without the use of live virus,* immunized puppies to a high degree against severe challenge exposures which proved fatal to 100% of unvaccinated puppies in three groups and 20% fatal in a fourth group.

The product which produced these remarkable results, *eliminating all danger of virus reactions,* consists of *Killed* Canine Distemper Virus suspended in Bronchisepticus-Streptococcus-Typhimurium Bacterin. Hence, it not only protects against the virus of Carré, but increases resistance against the principal secondary bacterial invaders which commonly complicate field cases of distemper.

Since the demonstration of the ability of this product to protect against distemper without the use of live virus, a large number of leading small animal specialists have abandoned the use of live canine distemper virus in their practice.

*Officially designated: Canine Distemper Vaccine suspended in Bronchisepticus-Streptococcus-Typhimurium Bacterin (VIROGEN) Bio. 666



PITMAN-MOORE COMPANY

Division of Allied Laboratories, Inc.

INDIANAPOLIS

Within this organization originated the policy: *Sales to Graduate Veterinarians ONLY.*

Clinical effectiveness and convenience are two practical considerations which have securely established the use of Numotizine for its analgesic-decongestive effect in both large and small animal practice.

The liberal application of Numotizine has frequently resulted in preserving the usefulness of valuable animals in cases of orchitis, metritis and mastitis—in bronchitis, colds and pneumonia. Useful also in the treatment of abscesses, glandular swellings, contusions and lacerations—in involvements of joints, muscles and tendons.

Relieves pain and congestion; promotes improved circulation; picks up products of exudative processes—favors phagocytosis.

CONVENIENT—because it is easily applied and one application lasts 8 hours or more.

Supplied in 4, 8, 15 and 30-oz. jars; 3½-lb. containers; available on direct request.

NUMOTIZINE, Inc.

900 NORTH FRANKLIN STREET
CHICAGO, ILLINOIS

Formula: Guaiacol ..... 2.60; Beechwood Creosote .. 13.02; Methyl Salicylate ..... 2.60; Sol. Formaldehyde ..... 2.60; C. P. Glycerine and Aluminum Silicate q.s. ad 1000 parts

Use Norden Bacterins

Norden
250 cc
BCV
Cl. Chauvei-Septicus Bacterin
(VACCINOL)
An alum-precipitated, chemically killed, whole bouillon culture of selected strains of the organism Cl. chauvei 50%, and Cl. septicus 50%.
Guinea Pig Tested.
Producer's Certificate of Quality
This product has been made and tested in our own laboratories and found sterile and non-toxic.
Serial No.
Expiration Date
SHAKE WELL
For the protection of healthy young cattle and other ruminants against blackleg and blackleg complicated with Cl. septicus. Inject subcutaneously, using aseptic precautions. Sheep, 3 cc, cattle, 5 cc. Remove susceptible animals from infected area for 4 to 7 days following administration of this product.
Keep in the dark at 40°-48° F.
NORDEN LABORATORIES
VETERINARY LICENSE No 189
NEBRASKA
FLOCCULENT PRECIPITATE
For Longer and Stronger Immunity

Chemically Killed *Guinea-Pig Tested*

Alum Precipitated

OUTSTANDING IN MASTITIS CONTROL!

VETICILLIN* *Lederle*

BRAND OF PENICILLIN

Extensive investigations show that penicillin in proper dosage is the most successful treatment available for mastitis. Research workers [1,2,3] have reported 97% to 100% cures in treated quarters that were infected with *Streptococcus agalactiae.*

VETICILLIN (penicillin) has definite advantages over other treatments in general use—It exerts powerful destructive action on gram-positive organisms, including *Streptococci, Staphylococci,* and *Corynebacteria* —It is safe and effective in either acute or chronic mastitis—It is not inhibited by the presence of milk or serum—It is relatively nontoxic and nonirritating to delicate udder tissue.

Intramammary infusions of VETICILLIN, given in acute mastitis, kill pathogenic bacteria, thereby reducing tissue damage, and bring about rapid recovery. In early chronic cases, when injections are given before serious damage has been done, a high percentage of infections are promptly controlled. VETICILLIN treatment will cure or help a large percentage of old chronic cases.

SPECIFY VETICILLIN

Efficient and dependable—
LEDERLE'S CANINE DISTEMPER VACCINE (KILLED VIRUS) and CANINE DISTEMPER VIRUS (TISSUE ORIGIN) for active immunization against canine distemper.

ANTI-CANINE DISTEMPER SERUM for short-time protection and treatment.

PACKAGES

VETICILLIN—Vials—100,000 Oxford Units Sterile Saline Solution—250 cc. vials

REFERENCES

1. Bryan, C. S.; Horwood, R. E., and Huffman, C. F.: Vet. Med. 40:87 (Mar.) 1945.
2. Murphy, J. M., and Pfau, K. O.: Cornell Vet. 35:88 (April) 1945.
3. Slanetz, L.W., and Allen, F.E.: J. A.V.M.A. 18:107 (July) 1945.

*Trade-Mark

Listen to the latest developments in research and clinical medicine discussed by eminent members of the medical profession in the Lederle radio series, "The Doctors Talk It Over," broadcast coast-to-coast over the American Broadcasting Company Network every Tuesday evening.

LEDERLE LABORATORIES, INC.

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You'll Be Interested to Know That . . .

Three Mexican bootleggers were jailed in Texas recently. That's news. The explanation: They violated the livestock sanitary regulation by not having their horses dipped for the removal of cattle ticks before crossing the Rio Grande.

■

Interesting and Disgusting

Mr. Roy T. Phieffer, druggist of Pequot Lakes, Minn., tells in Drug Topics how he upped his sales of "animal health merchandise" 1000%. "'Most farmers gladly tell you their troubles and if you know your animals and diseases they gladly listen to information'."

"Realizing the more he knew about animal and poultry diseases, the more remedies he could sell, Mr. Pfeiffer took a course at the South Dakota State University on diseases of farm animals. He bought the textbooks he used and has them at his store for ready reference at any time," according to *Drug Topics*.

Mr. Pfeiffer believes that putting his packages where the farmers can handle them helps sales.

■

Veterinary Livestock Inspectors Wanted

The California Personnel Board announces a "continuous duration civil service examinations" for Veterinary Livestock Inspectors.

There will be no written or oral examination but applicants will be rated upon statements made on their application blanks or entered on the eligible list in accordance with their experience by their statements made in the application.

Applicants must hold a license to practice veterinary medicine in California but they need not be residents of the state. They must be in good health and free from disabling defects.

The duties of Veterinary Livestock Inspectors are:

Examining and testing livestock in the field and in abattoirs, conducting tuberculin tests of livestock and overseeing the branding of animals reacting positively; inspecting livestock for external parasites; assisting livestock owners in dipping animals in connection with the control of scabies and ticks; making mallein tests for the detection of glanders in horses; investigating and instituting control procedure in connection with outbreaks of diseases such as anthrax, blackleg, hog cholera, foot and mouth disease, and Bang's disease, including the making of post mortem examinations, the issuance of quarantines, making sanitary inspections of premises where livestock are kept; investigating poultry diseases, including the inspection of poultry for diseases and recommending for treatment; inspecting foreign shipments of animal products at ports of entry; making ante and post mortem examinations at slaughter houses; cooperating with health, dairy, and livestock inspectors in animal disease control; keeping field records, submitting reports of work done, and doing other work as required.

The salary is $245 per month, plus $25 per month emergency pay.

Applications must be made on official forms which may be obtained from the offices of the Board at 108 State Building, San Francisco; 1015 L Street, Sacramento or 401 State Building, Los Angeles.

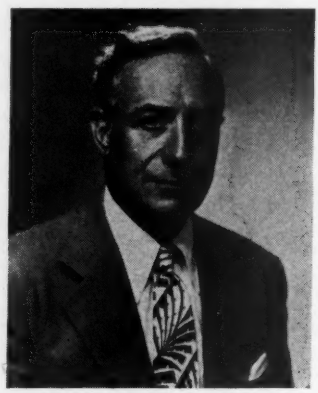
■

An Iowa farmer lost 70 of 80 shotes, averaging 75 pounds in weight, as a result of confining them in portable hog houses for about two hours. This should serve as a warning to users of portable houses with low roofs to have the roof doors open to prevent suffocation when swine are crowded into them—even for short periods in hot or cold weather.

—*Eastern Iowa Vet. Assn., News Release.*

■

Dr. George William Rawson has accepted the position of sales manager of the Animal Health Department of the Straub Laboratories, a division of the Borden Company. Doctor Rawson is well known to a large number of veterinarians through his association with Parke, Davis and Company where, for many years, he was in charge of the Department of Parasitology. He served in the Veterinary Corps of the Army during World War I



G. W. Rawson

and, later, was successively veterinary inspector in hog cholera control work in Virginia, engaged in fever tick eradication work in Texas and Louisiana and veterinary inspector for the Virginia Livestock Sanitary Commission on the control of bovine tuberculosis. After taking a postgraduate course in general biology at the Johns Hopkins School of Hygiene and Public Health he joined Parke Davis and Company in 1923. He is a member of the American Society of Parasitologists, the American Veterinary Medical Association, the United States Livestock Sanitary Association and other veterinary and related scientific associations.

Hog Cholera Vaccine
Here's your most effective weapon against hog cholera: B-T-V..use it!
Losses from cholera still cost hog raisers millions of dollars each year. You can help stop it with B-T-V—the safe vaccine that's recognized and used by progressive veterinarians all over America.
Note these advantages: (1) B-T-V eliminates live virus; premises are kept clean. (2) You can vaccinate anytime, all or part of a herd with safety. (3) There's no vaccination stunting. Hogs stay on full feed; get to market quicker. (4) There are no post-vaccination reactions.
Your Cutter representative will be glad to tell you more about the advantages of B-T-V. Or write direct to Cutter Laboratories, Berkeley, California; 111 No. Canal St., Chicago; 138 W. 53rd Street, New York.
BERKELEY CUTTER Laboratories
Established 1897

Classified Advertisements

For Sale, Wanted, etc., $2.50 for 25 words or less; additional words, 8 cents, payable in advance. 25 cents extra when replies are sent in care of VETERINARY MEDICINE, 7632 S. Crandon Ave., Chicago. Copy must be received by the 3rd of month.

WANTED POSITION: As assistant with a future in the West by ex-army major. Experienced. Address No. 537, care VETERINARY MEDICINE.
small animal hospital bypRalarpcticaci

POSITION WANTED: By recent graduate as assistant in large animal or mixed practice. Capable, single, draft exempt. Have had experience and can furnish references. Address No. 536, care VETERINARY MERICINE.

WANTED: Position as assistant in mixed or small animal practice, by a recent Middlesex graduate. Have had one year experience in a large small animal hospital. Address No. 535, care VETERINARY MEDICINE.

WANTED POSITION: In general practice having small **animal hospital** by young, single veterinarian with two years large animal experience. Address No. 538, care VETERINARY MEDICINE.

WANTED: To purchase small animal practice or hospital by experienced young veterinarian. Give full details, equipment, community, net income, etc. Address No. 531, care VETERINARY MEDICINE.

DOG WORLD EACH MONTH keeps you abreast of all dog developments—$2 for 1 year, 5 years $5. Picture Chart of All Breeds $1, 3 for $2. Judy Publishing Company, 3323 S. Michigan Blvd., Chicago 16, Ill.

WANTED: Veterinarian to assist in a large small animal hospital in Chicago. Good salary and apartment if married. State age and experience in first letter. Address No. 511, care VETERINARY MEDICINE.

WANTED TO BUY or lease large well equipped small animal hospital by two experienced veterinarians. Large down payment available. Describe fully. Any location acceptable. Address No. 540, care VETERINARY MEDICINE.

FOR SALE: Practice in city of 100,000, large country area; large small animal cliental; nice hospital facilities. Real place for a hard working young veterinarian, with a lot of ambition to take over a big practice immediately. Owner wants to retire. Address No. 539, care VETERINARY MEDICINE.

In Australia during the season when the wild flower bindi-eye covers the sheep grazing lands, soft leather boots are put on the shepherd dogs. The leaves of the bindi-eye plant are toothed and sharp and cause injury to the dog's feet unless they are protected.

FLEX-O MEDICATED TEAT DILATORS

are the only cloth covered dilators that contain no wires which might cause further infection or serious injury to the teat canal.

The soft woven cloth furnishes soothing protection to the injured lining while tissues heal and carries the medication inside the teat canal directly to the seat of the trouble.

FLEX-O Dilators are made in two sizes, Regular or Large packed in antiseptic ointment, 24 to jar, price 50c. Price to veterinarians $4, per doz. jars postpaid.

DAIRY REMEDIES CO.
120 High Street, Montclair, N. J.

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EAR MITES

VETERINARY DIVISION
The Doho Chemical Corp., New York-Montreal-London

Paint brushes having good paint-carrying capacity, which make smooth films and wear well, are being made from casein of milk.

■

The director of the division of food and chemistry of the New Hampshire state department of health reports that "there are sentimental and often religious objections to the use of horse meat [as food] but experience has shown that the meat of this animal is as wholesome and nutritious as that of beef."

■

A competition for the development of a chicken broad of breast and having a larger percentage of meat to bones than the standard breeds is being conducted by the Great Atlantic & Pacific Tea Co. For the fowl that presumably will be developed through cross breeding the company is offering $5,000.

■

Buy Victory Bonds—to have and to hold

■

McKeon's

"Sulpho Dip"

for

Parasitic skin diseases on large and small animals. Safe, economical, effective.

Trial gallon on 30 days' approval: $3.00

(Fool-proof in hands of laity.)

Sample FREE. Ask for yours.

Sold to Veterinarians ONLY

Sulphur Products Co.
Greensburg, Pa.

Defense against distemper

In the field of veterinary medicine one of the most outstanding contributions has been the modification of distemper virus by numerous serial passages through ferrets by Dr. Robert G. Green, Professor of Bacteriology and Virology at a prominent medical school, resulting in

Distemperoid Virus

CANINE DISTEMPER VACCINE
FERRET ORIGIN
GREEN METHOD

A live non-pathogenic virus producing rapid immunity

THE *One-Injection* METHOD OF IMMUNIZING DOGS AGAINST DISTEMPER

Manufactured by
FROMM LABORATORIES, INC., Grafton, Wis.

Healthy puppies 8 weeks of age can be safely and promptly immunized.

For booklet and prices write

WINTHROP CHEMICAL COMPANY, INC. EXCLUSIVE DISTRIBUTORS

Pharmaceuticals of merit for the veterinarian 170 VARICK STREET • NEW YORK 13, N. Y.

RED UDDER LINIMENT

NEW—PROFESSIONAL

The costly azo dye, Biebrich Scarlet Red, with camphor, wintergreen and turpentine in a heavy emollient base, penetrates and stains the udder, leaving the odor of wintergreen.

Compare this product with udder "salves" and it will soon be one of your best dispensing items.

Doz. @ $3.50; 3 Doz. . .$10.25
Gal. @ $3.00; 4 Gal. . . . 11.50

Over $10.00 Prepaid Up to 10% of Invoice.

Arnold Laboratories
NEW CASTLE, IND.

After serving for several years as executive vice-president and treasurer of Allied Mills, Harold J. Buist has been elected president and chairman of the board of that company.

■

As of September, 1945, the Ministry of Agriculture (England) announces that crystal-violet vaccine is soon to be made available there for the protection of hogs against swine fever.

■

An expansion program for the veterinary division of Winthrop Chemical Company is now under way. The division will continue to sell pharmaceutical products exclusively to graduate veterinarians.

★ ★ ★ BUY VICTORY BONDS ★ ★ ★
AND HOLD THEM

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THE PEOPLE'S CHOICE

FISTONE is unanimously agreed upon by veterinarians throughout the country as the medicine of choice for its efficacy and performance in the treatment of suppurative affections in horses and mules. FISTONE has a decided tonic effect which will be found beneficial in all horses that have received treatment for intestinal parasites.

FISTONE

THE FISTONE AND APPLIANCE COMPANY,
College Corner, Ohio.

Trial Order—One dozen boxes (once only).....$ 8.00
Regular price—One dozen boxes..... 10.00
One-half dozen boxes..... 5.00

For orders to be sent outside of United States add 20% to the above prices.

Dr......

Address.....

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Reasonably Priced
Standardized Multiple

VITAMINS

(Human or Animal Use)

Quinta Vitamins (A, B, C, D)

Active Ingredients in Each Capsule:

Vitamin A (Fish Liver Oils)	5,000 U.S.P. units
Vitamin D (Synthetic)	500 U.S.P. units
Vitamin B_1 (Thiamin Hydrochloride 1 mg)	33 U.S.P. units
Vitamin B_2 (G) (Riboflavin 0.5 mg)	500 Gamma
Vitamin C (Ascorbic Acid 30 mg)	600 U.S.P. units

Bottle of 100.....$ 1.25
Bottle of 1000..... 10.00

Octo-mins (A, B, C, D, G with B-Complex)

One a Day for Adults and Children Over Twelve Years of Age

Active Ingredients in Each Capsule:

Vitamin A (Fish Liver Oils)	5,000 U.S.P. units
Vitamin D (Synthetic)	800 U.S.P. units
Vitamin B_1 Thiamin Hydrochloride 1.5 mg)	500 U.S.P. units
Vitamin B_2 (G) (Riboflavin 2 mg)	2,000 Gamma
Vitamin B_6 (Pyridoxin)	250 Gamma
Calcium Pantothenate	1,000 Gamma
Vitamin C (Ascorbic Acid 30 mg)	600 U.S.P. units
Nicotinamide	20 mg

Bottle of 100.....$ 1.67
Bottle of 1000..... 14.00

PANTOBEX (High Potency B-Complex Capsules)

Each Capsule Contains:

Vitamin B_1 (3 mg, Thiamin Hydrochloride)	1,000 U.S.P. units
Vitamin B_2 (Riboflavin)	3 mg.
Vitamin B_6 (Pyridoxine Hydrochloride)	0.25 mg
Calcium Pantothenate	5 mg
Niacin Amide	20 mg
Liver B Vitamins Concentrate U.S.P.	50 mg

Bottle of 100.....$ 1.40
Bottle of 1000..... 12.00

VETERINARY USE ONLY
Vitamin A Capsules
500,000 U.S.P. Units

Per box of 12 capsules.....$3.40

CALF CAPSULES WITH "C"

Vitamin A	5,000 U.S.P. units
Vitamin C	250 mg
Vitamin D	500 U.S.P. units
Niacin	50 mg

Bottle of 100.....$2.60

All prices F.O.B. Chicago

AMERICAN CHEMICAL CO., INC.

433 East Erie, Chicago 11, Illinois

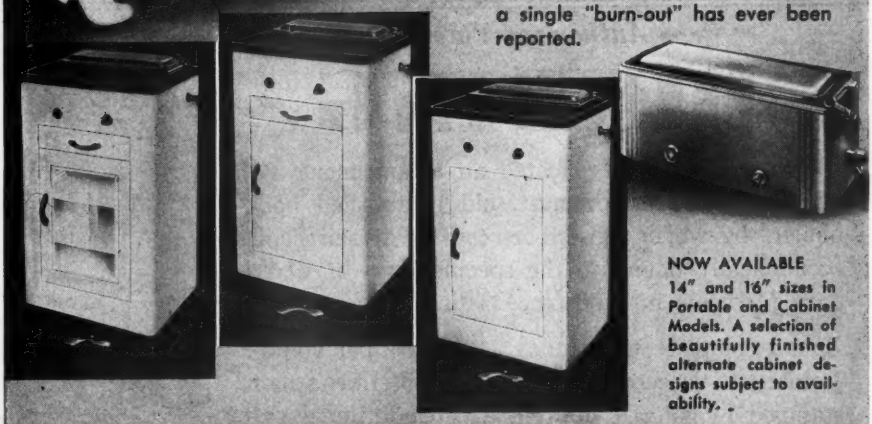
Compare

the advanced automatic development of

AMERICAN SMALL INSTRUMENT STERILIZERS

As applied to these superior private office sterilizers, the term "automatic" is all inclusive. Not only does it imply automatic temperature control of on-and-off operation, it includes PERMANENT safety low-water cut-off . . . automatic "burn-out-proof" safety that protects both instruments and sterilizer.

When left in operation, unattended . . . during an emergency call . . . over a holiday or weekend, no damage to instruments or sterilizer can result. When low-water cut-off occurs, functional operation can only be resumed by replenishing water in the chamber and manually switching on the current. Of the thousands in use, not a single "burn-out" has ever been reported.



NOW AVAILABLE

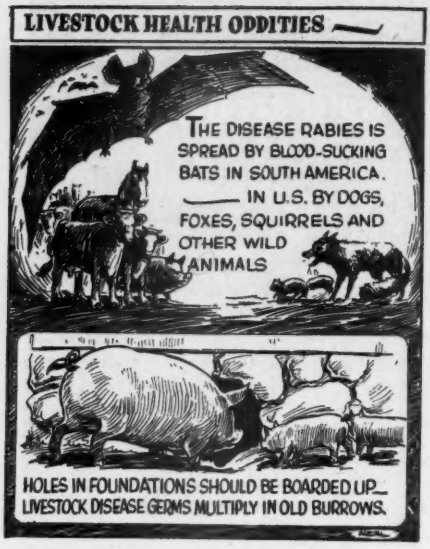
14" and 16" sizes in Portable and Cabinet Models. A selection of beautifully finished alternate cabinet designs subject to availability.

ORDER TODAY or write for descriptive literature.

AMERICAN STERILIZER COMPANY

Erie, Pennsylvania

DESIGNERS AND MANUFACTURERS OF SURGICAL STERILIZERS, TABLES AND LIGHTS


LIVESTOCK HEALTH ODDITIES
THE DISEASE RABIES IS SPREAD BY BLOOD-SUCKING BATS IN SOUTH AMERICA.
—— IN U.S. BY DOGS, FOXES, SQUIRRELS AND OTHER WILD ANIMALS
HOLES IN FOUNDATIONS SHOULD BE BOARDED UP— LIVESTOCK DISEASE GERMS MULTIPLY IN OLD BURROWS.

American Foundation for Animal Health

We need to be more concerned about letting inferior dairy products get onto the market. If we had the courage to turn back to the hands of the producer dairy products that are of inferior quality, we would take a long step forward in increasing the consumption of dairy products and in doing away with surplus.—*Hoard's Dairyman.*

The idea that wheat stored longer than two or three years before being milled and used in bread loses vitamins, has been disproved by the Colorado Experiment Station. Tests were made of wheat held for 22 years in proper storage. Bread made from this wheat was good—no loss of proteins or vitamins.

■

At his request, Prof. Frank B. Morrison, head of the animal husbandry department at Cornell University since 1927, will be permitted to relinquish his administrative duties so he may spend full time in research, in developing new publications in livestock production and in teaching graduate students. A world authority on feeding and nutrition of livestock, Prof. Morrison is best known for the internationally-used texts, "Feeds and Feeding" and "Feeds and Feeding, Abridged." Prof. Morrison expects to rewrite "Feeds and Feeding."—*Nat'l. Provisioner.*

■

Recently the U. S. Department of Agriculture reported that it is receiving more inquiries from men in the service about poultry raising than any other phase of agriculture.

Some colleges are offering a two-year short course in agriculture—making it possible for a student to take all the poultry subjects in a shorter period. Others offer a few weeks' short course for regular or special students and for veterans. Among the institutions offering short courses for veterans are: Alabama Polytechnic Institute, Florida College of Agriculture, Kansas and Michigan State Colleges, University of Maryland, etc.

Authorized Veterinary Medicine

BINDING

The publishers have effected an arrangement with one of America's foremost, old established bookbinders by which subscribers can have their copies economically bound to the specifications of Veterinary Medicine in handsome, lasting volumes.

Bound complete with Index. 12 issues per volume, January to December, inclusive. Subscriber's name stamped in gold, if desired, at no additional cost. Bound books will be sent express collect. Copies should be sent prepaid. Check or Money Order should accompany order, made payable to:

DE LUXE BOOK CLOTH — Distinctive pattern. A quality binding that is durable, attractive, and waterproof.
Price...$1.75 per Vol.

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308 W. Randolph St. Chicago, Ill.

Specializing in the binding of new and old books, magazines and manuscripts.

Authorities claim—the time to start feeding Spring litters is before the dam is bred * * * add Con-o-mineral Supplement * * * feed it all through gestation * * * keep it up till weaning * * * then feed it to the pigs * * * Con-o-mineral contains valuable feeding elements too often deficient in sufficient quantities in ordinary feeds * * * here is a good ration:

900 lbs. ground corn—*800 lbs. ground oats—**100 lbs. linseed meal—**200 lbs. soybean oil meal—100 lbs. tankage—****300 lbs. ground alfalfa—100 lbs. Con-o-mineral Supplement—35 lbs. salt—total 2535 lbs.**

AVERAGE ANALYSIS—Crude protein, 16.17%; digestible protein, 13.14%; fibre, 8.33%; fat, 4.15%; total digestible nutrients, 69.78%, approximately.

*Substitutes for corn or oats pound for pound—corn and cob meal, ground barley, ground kafir, milo, hominy feed, brown shorts or standard middlings. Half of the ground corn or ground oats may be replaced by ground wheat.

**Cottonseed meal may replace either soybean oil meal or linseed meal.

***Tankage should be used if possible and where obtainable may replace half of soybean oil meal or all of linseed meal. Meat scraps may replace tankage. Where tankage and meat scraps are unobtainable they may be replaced with linseed, cottonseed or soybean oil meal.

****Alfalfa meal or ground alfalfa may be left out of ration when pigs are on good alfalfa or clover pasture.

Ample proteins, carbohydrates and fats, in balance, to cut costs in saving feed, time and labor—plus—

Con-o-mineral

supplement

with its potent calcium, phosphorus, iodine, vitamins and valuable trace chemicals—feeds that are just as essential as proteins, carbohydrates and fats. Con-o-mineral Supplement makes grains, concentrates and forage go farther, do more, cost less.

Suggest this ration for all pigs from weaning to market with shelled corn added only after pigs reach 100 pounds. You and your clients will be glad you did.

10th Free Feed Book

Tells more about this successful pig ration. Gives 40 other authentic livestock and poultry rations. Write for your desk copy today.

Con-o-mineral Supplement is available only through graduate veterinarians.

Vitamineral Products Co., Peoria 3, Illinois

Via-D-Mineral ● ***Con-o-mineral*** ● ***Viaferm***

Effective • Convenient • Economical

THE effectiveness of Mercurochrome has been demonstrated by more than twenty years of extensive clinical use. For professional convenience Mercurochrome is supplied in four forms—Aqueous Solution in Applicator Bottles for the treatment of minor wounds, Surgical Solution for preoperative skin disinfection, Tablets and Powder from which solutions of any desired concentration may readily be prepared.

Mercurochrome

(H. W. & D. brand of merbromin, dibromoxymercurifluorescein-sodium)

is economical because stock solutions may be dispensed quickly and at low cost. Stock solutions keep indefinitely.

Mercurochrome is antiseptic and relatively non-irritating and non-toxic in wounds.

Complete literature will be furnished on request.

HYNSON, WESTCOTT & DUNNING, INC.
BALTIMORE, MARYLAND

State Feed Regulations

Effective July 1 the new state law of West Virginia applying to dog feeds and to all livestock feeds, requires strict labeling—specific name of each ingredient, with the statement of the amount or percent of each ingredient. These must be named in "common English names." Dog food labels must show the percentage of tankage.

Feeds cannot be sold in this state unless a license has been issued in advance.—*Dog World.*

■

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Coming Meetings

Horse & Mule Association of America, Palmer House, Chicago, December 5, 1945. Sec. Wayne Dinsmore, 407 S. Dearborn St., Chicago 5.

Delaware Veterinary Medical Association, Wilmington, December 14, 1945. Sec. V. C. Lancaster, New Castle.

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Ohio State Veterinary Medical Association, Deshler-Wallick Hotel, Columbus, January 2-4, 1946. Sec. R. E. Rebrassier, Ohio State University, Columbus.

Interstate Veterinary Medical Association, Warrier Hotel, Sioux City, Iowa, November 6-7.

United States Livestock Sanitary Association, Hotel LaSalle, Chicago, December 5-7. Sec. R. A. Hendershott, State Dept. of Agri., Trenton, N. Jersey.

Oklahoma Veterinary Medical Association, Hotel Skirvin, Oklahoma City, January 7-8, 1946. Sec. C. H. Fauks, 507 Cotton Exchange Bldg., Oklahoma City 2.

Indiana Veterinary Meedical Association, Severin Hotel, Indianapolis, January 9-11. Sec. Frank H. Brown, 226 W. Ohio St., Indianapolis.

Pennsylvania Conference for Veterinarians, University of Pennsylvania, School of Veterinary Medicine, Philadelphia, January 9-11, 1946. Dean, 39th & Woodland Ave., Philadelphia.

Cornell University Conference for Veterinarians, New York State Veterinary College, Ithaca, January 9-11. Acting Dean, Cornell University, Ithaca.

Kansas Veterinary Medical Association, Hotel Jayhawk, Topeka, January 14-15, 1946. Sec. Chas. W. Bower, 3119 Stafford St., Topeka.

Mississippi State Veterinary Medical Association, Hotel Edwards, Jackson, January 14-15. Sec. Glenn D. Gates, Clarksdale.

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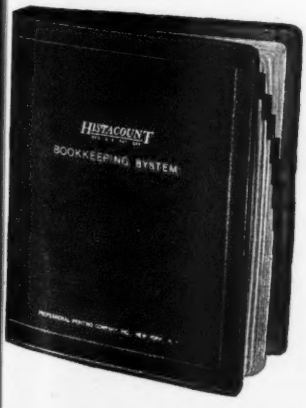

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Illinois State Veterinary Medical Association, Springfield, January 17-18. Sec. C. C. Hastings, Williamsville.

Iowa Veterinary Medical Association, Hotel Fort Des Moines, Des Moines, January 22-24, 1946. Sec. C. C. Franks, 720 Grand Ave., Des Moines.

North Carolina State College Conference for Veterinarians, Polk Hall, Raleigh, January 22-25. Chairman, C. D. Grinnells, State College Station, Raleigh.

Michigan Conference for Veterinarians, Michigan State College, East Lansing, Jan. 23-24. Dean Ward Giltner.

Minnesota State Veterinary Medical Society, Hotel Nicollet, Minneapolis, January 28-30. Sec. H. C. H. Kernkamp, University Farm, St. Paul 8.

Deaths of Veterinarians

E. A. Rolston, Clinton, Iowa, ISC '21; April 12, 1945.

D. M. Robertson, 55, Brookville, Ont., ONT '12; served on the faculty of the Ontario Veterinary College and was stationed at Brookville for 20 years with the Health of Animals Department; May 13, 1945.

J. A. Picard, 51, Montreal, Can., ONT '14; served as meat inspector in Montreal for serverals years after 26 years of practice at Beloeil, Que.; June 2, 1945.

Capt. W. A. Laird, Bell, Calif., COLO '43; was serving in the Veterinary Corps stationed at Modena, Italy, when he was killed in automobile accident; August 14, 1945.

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H. B. Morgan, 74, Muskogee, Okla., KCVC '10; practiced at Muskogee from time of graduation; August 20, 1945.

Benjamin H. Saxton, 58, Kansas, Ill., ONT '08; August 20, 1945.

F. W. Brewer, 72, Indiahoma, Okla., CVC '02; served in the BAI and as State Veterinarian of Oklahoma; August 21, 1945.

Fred E. Cleaver, 63, Avon, N. Y., CORN '07; August 28, 1945.

Geo. H. Cobb, 85, Housatonic, Mass., CVC 1893; September 7, 1945.

E. D. Criswell, 61, King City, Mo., WEST '04; had practiced in King City since his graduation; September 15, 1945.

R. I. Kilpatrick, Mediaopolis, Iowa, KCVC '12; September 19, 1945.

John S. Barbee, 72, Pasadena, Calif., KCVC '08; served for nine years after graduation as head of the Food Inspection Service of Kansas City; later was associated with the Kinsley Laboratories; had lived in California nine years; September 21, 1945.

George O. Shipley, 54, West Branch, Iowa, OSU '25; served in World War I, in First Division, receiving awards of the Silver Star and the Purple Heart for gallantry in action; September 24, 1945.

James Dixon, Tipton, Iowa, ONT, 1898; September 27, 1945.

F. R. Ahlers, Lamette, Iowa, ISC '02; September 30, 1945.

L. G. Moore, Barneveld, New York, ONT 1893; had practiced in Barneveld for 52 years; October 4, 1945.

Homer A. Wilson, Malta Bend, Mo., KCVV '13; was a 1st Lieut. in World War I and was State Veterinarian of Missopri from 1922-1935, since which time he had servesd in the B.A.I.; October 5, 1945.

John J. Hayes, 64, Chicago, Ill., had served more than 20 years in the BAI and for a number of years with Armour & Company and again in the BAI where he was serving as traveling veterinary inspector in the Food Inspection Division of the War Food Administration at the time he retired about six months before his death; October 21, 1945.

J. S. Wesson, Garner, Iowa, KCVC '17; October 23, 1945.

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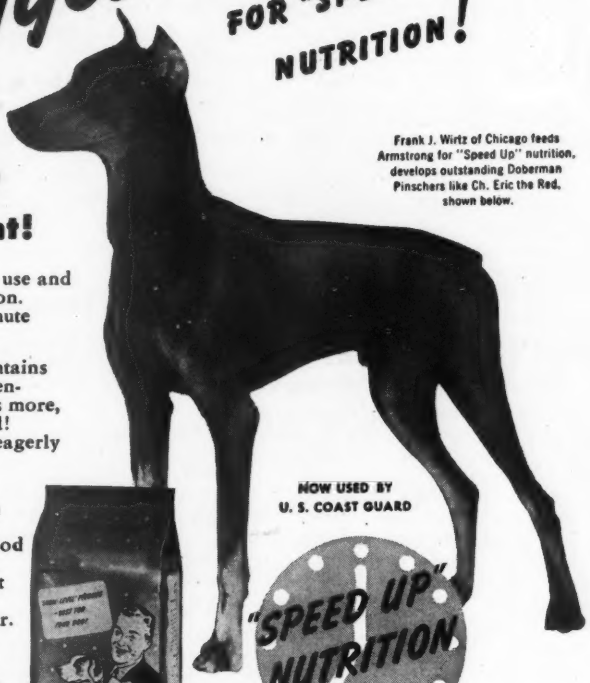

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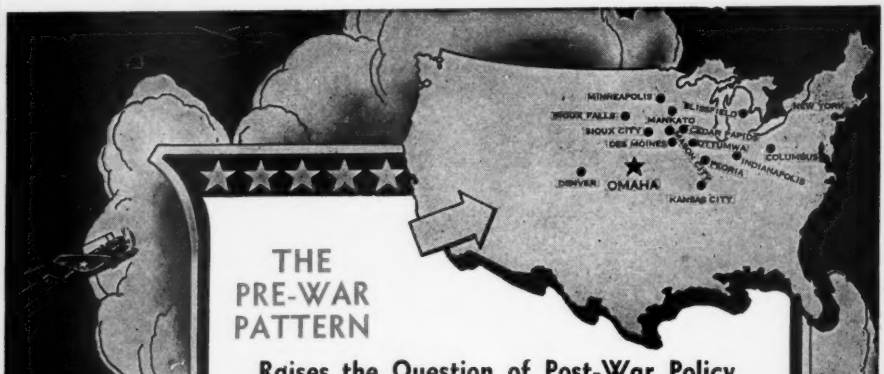

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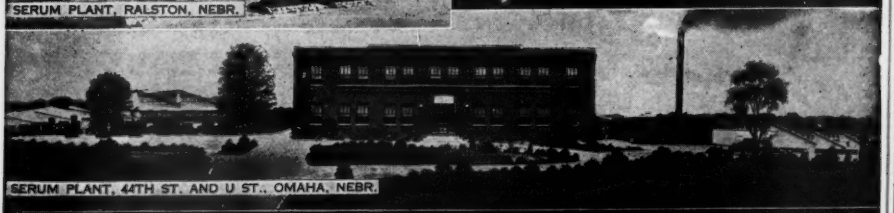

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